Supporting Information

Synthesis of Dibenzocycloketones by Acyl Radical Cyclization from Aromatic Carboxylic Acids via Methylene Blue as Photocatalyst

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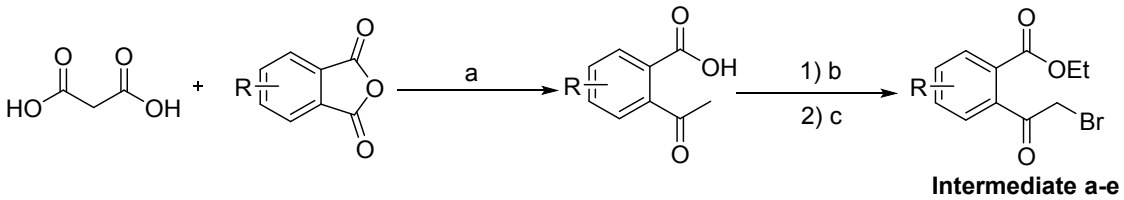
1. Materials and Measurements

All starting materials were purchased from TCI; the reagents were obtained from J&K Chemical Company and used without further purification unless specified. The acylation reactions were monitored by thin laye chromatography (TLC), and column chromatography were carried out on silica gel (300 ~ 400 mesh). ^{1}H NMR and ^{13}C NMR spectra were recorded on a Bruker Ultrashield™ 400 spectrometer operating at 400 MHz and 100 MHz in DMSO or Chloroform. Chemical shifts were reported in ppm with tetramethylsilane (TMS) as internal standard. The following abbreviations were used to describe peak splitting patterns when appropriate: s = singlet, d = doublet, t = triplet, m = multiple. Coupling constants (J) are reported in Hertz (Hz). Melting points were recorded on a WRR melting point apparatus. Infrared spectra were recorded with the Perkin-Elmer Spectrum100 Fourier transform infrared spectroscopy. UV-visible spectra were measured by Shimadzu UV-2501PC UV-visible spectrophotometer. Elemental analyses of C, H, N were performed on a Elementar Vario MICRO cube. High resolution mass spectrum was accomplished on Agilent 1100 (VL) mass spectrometer.

2. Preparation of ethyl 2-(2-bromoacetyl)benzoates. (General Procedure A)



Intermediate a-e

Reagents and conditions:

a. Et_3N, 80°C, 14 h;

b. H_2SO_4, CH_3CH_2OH, reflux, 3 h;

c. $CuBr_2$, ethyl acetate, reflux, 4 h.

a. **2-acetylbenzoic acids:**

A stirred mixture of phthalicanhydrides and triethylamine (1.5 equiv) were heated to 80 °C. Ten equal portions of malonic acid (10 × 0.12 equiv; 1.2 equiv total) were charged over a period of 4 h, and the reaction mixture was maintained at 80°C for a further 10 h. Hydrochloricacid was charged and the reaction stirred for a further 30 min at 80 °C before being cooled to 25 °C, and the resulting slurry was filtered. The damp cake was washed with water and then dried under vacuum at 50 °C to give the title compound as light-brown crystals.

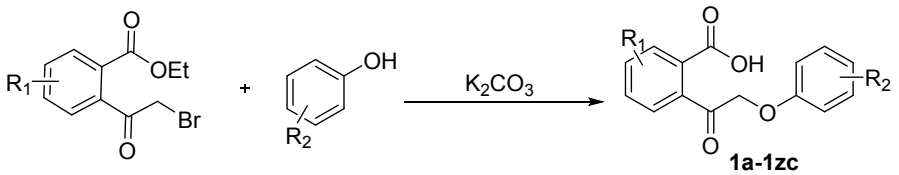
b. **Ehyl 2-acetylbenzoates:**

2-Acetyl benzoic acids were dissolved in ethanol (7.0 equiv for substrate), added H_2SO_4 (1.5 equiv), and stirred under reflux for 3 h. Then the mixture was added into water, neutralized with sodium bicarbonate to pH neutral, extracted, and dried. Distillation under reduced pressure gave colorless transparent liquids.

c. **Ehyl 2-(2-bromoacetyl)benzoates:**

Ethyl 2-acetylbenzoates were placed in a volumetric flask, ethyl acetate (4.0 equiv for substrate) was added thereto and stirred until completely dissolved, and copper bromide (1.6 equiv) powder was added. Then the temperature was raised to 80 ° C and maintained for 3 h under stirring. The solid of cuprous bromide was removed by suction under reduced pressure, washed with saturated brine, extracted with dichloromethane and dried over anhydrous sodium sulfate. The solvent was dried in a rotary evaporator to give crude solids.

3. Preparation of 2-(2-phenoxyacetyl)benzoic acids (Compound 1). (General Procedure B)

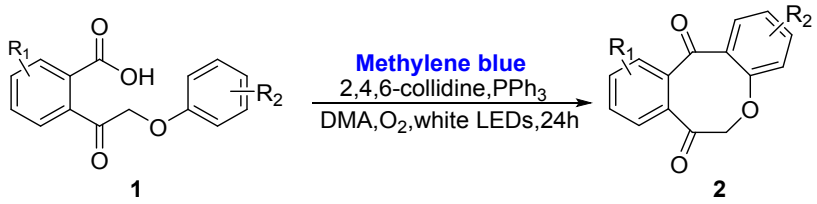


1a-1zc

Phenols(1.1 equiv, 5.5mmol) dissolved in acetone (4 equiv for substrate) was added with ethyl 2-(2-bromoacetyl)benzoate (1.0 equiv， 5 mmol) and anhydrous K_2CO_3 (1.5 equiv, 7.5mmol). The resulting mixture was stirred for 4 h at room temperature. A 5% aqueous sodium hydroxide solution was added, and the reaction was carried out at 50 ° C for 10 h. 10% HCl was added until the pH was neutral, and ethyl acetate was

extracted. After filtration, the solvent was evaporated under reduced pressure. The residue was purified by the recrystallization method using alcohol.

4. Preparation of 6H-dibenzo[b,e]oxocine-7,12-diones (Compound 2). (General Procedure C)



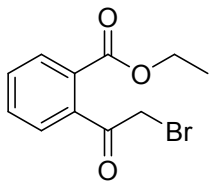
Carboxylic acids **1** (0.2 mmol) and methylene blue (2 mol%) were added into a 10 mL vial equipped with a teflon coated magnetic stirring bar. 2.0 mL DMA, 2,4,6-collidine (1.0 equiv, 0.2 mmol) and PPh_3 (1.5 equiv, 0.3 mmol) were added. The vial was capped sealed with teflon tape and irradiated (at approximately 4 cm away from the light source) with a warm white LEDs under vigorous stirring at room temperature and monitored by TLC. After 24h the reaction was finished, the reaction crude was transferred into a 50 mL separation funnel using 15 mL of ethyl acetate. The mixture was washed with water (25 mL) and brine (25 mL x2). The organic phase was then separated and dried over anhydrous Na_2SO_4. The Na_2SO_4 was then filtered off and the solvent was removed under vacuum, and the residue was purified by silica gel chromatography to a□ord the product **2**.

5. General Procedure for Radical Trapping Experiment with TEMPO.

Carboxylic acids **1** (0.2 mmol) , methylene blue (2 mol%), and TEMPO (2.0 equiv, 0.4 mmol) were added into a 10 mL vial equipped with a teflon coated magnetic stirring bar. 2.0 mL DMA, 2,4,6-collidine (1.0 equiv, 0.2 mmol) and PPh_3 (1.5 equiv, 0.3 mmol) were added. The vial was capped sealed with teflon tape and irradiated (at approximately 4 cm away from the light source) with a warm white LEDs under vigorous stirring at room temperature and monitored by TLC. After 24h the reaction was finished, the reaction crude was transferred into a 50 mL separation funnel using 15 mL of ethyl acetate. The mixture was washed with water (25 mL) and brine (25 mL x2). The organic phase was then separated and dried over anhydrous Na_2SO_4. The Na_2SO_4 was then filtered off and the solvent was removed under vacuum, and the residue was purified by silica gel chromatography to a□ord the product **V**.

6. Spectra Data

Ethyl 2-(2-bromoacetyl)benzoate (Intermediate a).

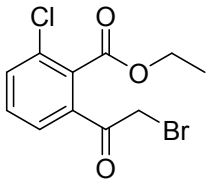


Intermediate a

Prepared according General Procedure. Light yellow solid. Mp. 60-62°C. ^{1}H NMR (400 MHz, Chloroform-*d*) δ 8.01 (d, *J* = 7.6 Hz, 1H), 7.64 – 7.60 (m, 1H), 7.57 – 7.52 (m, 1H), 7.39 (d, *J* = 7.4 Hz, 1H), 4.41 – 4.33 (m, 4H), 1.39 (t, *J* = 7.1 Hz, 3H). **(Figure S1)** ^{13}C NMR (100 MHz, Chloroform-*d*) δ= 197.4, 166.0, 140.6, 132.7, 130.3, 130.1, 128.1, 127.6, 62.1, 35.2, 14.1. **(Figure S2)** HRMS: (EI) calcd

for $C_{11}H_{11}BrO_3$ $[M+H]^+$: 270.9971. Found: 270.9976. Anal.calcd for: $C_{11}H_{11}BrO_3$: C 48.73, H 4.09; Found: C 48.72, H 4.07. FT-IR (KBr disc): v= 1709, 1304, 1287cm^{-1}. UV-*vis* spectra absorption peak: 276.5nm.

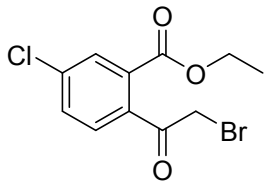
Ethyl 2-(2-bromoacetyl)-6-chlorobenzoate (Intermediate b).



Intermediate b

Prepared according General Procedure A. White solid. Mp. 52-53°C. ^{1}H NMR (400 MHz, Chloroform-*d*) δ 7.76 (d, *J* = 7.8 Hz, 1H), 7.64 (d, *J* = 8.0 Hz, 1H), 7.48 (t, *J* = 8.0 Hz, 1H), 4.46 (q, *J* = 7.2 Hz, 2H), 4.40 (s, 2H), 1.40 (t, *J* = 7.2 Hz, 3H). **(Figure S3)** ^{13}C NMR (100 MHz, Chloroform-*d*) δ= 190.3, 166.3, 134.4, 134.2, 133.9, 133.2, 130.4, 127.5, 62.3, 31.0, 13.9. **(Figure S4)** HRMS: (EI) calcd for $C_{11}H_{10}BrClO_3$ $[M+H]^+$: 304.9581. Found: 304.9587. Anal.calcd for: $C_{11}H_{10}BrClO_3$: C 43.24, H 3.30; Found: C 43.25, H 3.29. FT-IR (KBr disc): v= 1709, 1279, 1180, 1111cm^{-1}. UV-*vis* spectra absorption peak: 295.6nm.

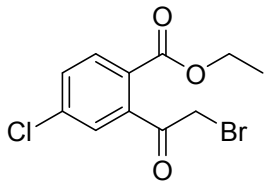
Ethyl 2-(2-bromoacetyl)-5-chlorobenzoate (Intermediate c).



Intermediate c

Prepared according General Procedure A. Light yellow solid. Mp. 74-81°C. ^{1}H NMR (400 MHz, Chloroform-*d*) δ 7.96 (d, *J* = 8.4 Hz, 1H), 7.50 (dd, *J* = 8.4, 2.0 Hz, 1H), 7.36 (d, *J* = 2.0 Hz, 1H), 4.37 (q, *J* = 7.1 Hz, 2H), 4.31 (s, 2H), 1.39 (t, *J* = 7.1 Hz, 3H). **(Figure S5)** ^{13}C NMR (100 MHz, Chloroform-*d*) δ= 196.1, 165.1, 142.3, 139.4, 131.5, 130.3, 127.9, 126.2, 62.3, 34.7, 14.1. **(Figure S6)** HRMS: (EI) calcd for $C_{11}H_{10}BrClO_3$ $[M+H]^+$: 304.9581. Found: 304.9574. Anal.calcd for: $C_{11}H_{10}BrClO_3$: C 43.24, H 3.30; Found: C 43.25, H 3.31. FT-IR (KBr disc): v= 1711, 1300, 1267cm^{-1}. UV-*vis* spectra absorption peak: 285.2nm.

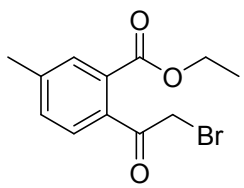
Ethyl 2-(2-bromoacetyl)-4-chlorobenzoate (Intermediate d).



Intermediate d

Prepared according General Procedure A. Light yellow solid. Mp. 93-96°C. ^{1}H NMR (400 MHz, Chloroform-*d*) δ 7.97 (d, *J* = 2.0 Hz, 1H), 7.59 (dd, *J* = 8.2, 2.0 Hz, 1H), 7.36 (d, *J* = 8.1 Hz, 1H), 4.39 (q, *J* = 7.1 Hz, 2H), 4.30 (s, 2H), 1.40 (t, *J* = 7.2 Hz, 3H). **(Figure S7)** ^{13}C NMR (100 MHz, Chloroform-*d*) δ= 196.4, 164.9, 138.7, 136.6, 132.6, 130.1, 129.9, 129.2, 62.5, 34.6, 14.1. **(Figure S8)** HRMS: (EI) calcd for $C_{11}H_{10}BrClO_3$ $[M+H]^+$: 304.9581. Found: 304.9575. Anal.calcd for: $C_{11}H_{10}BrClO_3$: C 43.24, H 3.30; Found: C 43.22, H 3.29. FT-IR (KBr disc): v= 1707, 1290, 1279cm^{-1}. UV-*vis* spectra absorption peak: 285.5nm.

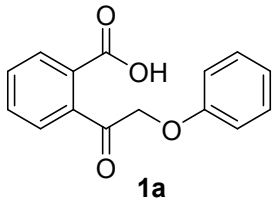
Ethyl 2-(2-bromoacetyl)-5-methylbenzoate (Intermediate e).



Intermediate e

Prepared according General Procedure A. Gray solid. Mp. 57-59°C. ^{1}H NMR (400 MHz, Chloroform-*d*) δ 7.91 (d, *J* = 8.0 Hz, 1H), 7.80 – 7.76 (m, 1H), 7.43 – 7.40 (q, *J* = 7.1 Hz, 1H), 4.37 (m, 2H), 4.33 (s, 2H), 2.44 (s, 3H), 1.38 (t, *J* = 7.1 Hz, 3H). **(Figure S9)** ^{13}C NMR (100 MHz, Chloroform-*d*) δ= 197.8, 166.3, 143.8, 141.0, 130.8, 130.5, 130.2, 127.7, 61.8, 35.4, 21.5, 14.1. **(Figure S10)** HRMS: (EI) calcd for $C_{12}H_{13}BrO_3$ $[M+H]^+$: 285.0127. Found: 285.0122. Anal.calcd for: $C_{12}H_{13}BrO_3$: C 50.55, H 4.60; Found: C 50.57, H 4.59. FT-IR (KBr disc): v= 1701, 1304, 1285cm^{-1}. UV-*vis* spectra absorption peak: 283.1nm.

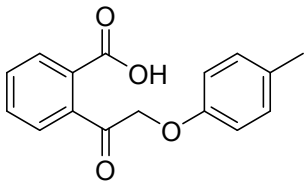
2-(2-phenoxyacetyl)benzoic acid (1a).



1a

Prepared according General Procedure B. White solid (1.19g, 93%). Mp. 89-91°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.35 (s, 1H), 7.86 (d, J = 7.6 Hz, 1H), 7.80 (d, J = 4.0 Hz, 2H), 7.67 (dt, J = 8.1, 4.2 Hz, 1H), 7.23 (t, J = 7.9 Hz, 2H), 6.92 (t, J = 7.3 Hz, 1H), 6.84 (d, J = 8.0 Hz, 2H), 4.52 (d, J = 10.3 Hz, 1H), 4.34 (d, J = 10.3 Hz, 1H). **(Figure S11)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 168.3, 158.3, 148.1, 135.1, 131.2, 129.9, 127.5, 125.0, 123.9, 121.6, 115.2, 105.8, 70.6. **(Figure S12)** HRMS: (EI) calcd for $C_{15}H_{12}O_4$ $[M+H]^+$: 257.0815. Found: 257.0819. Anal.calcd for: $C_{15}H_{12}O_4$: C 70.31, H 4.72; Found: C 70.32, H 4.73. FT-IR (KBr disc): v= 3337, 1747, 1512, 1243, 1225cm^{-1}. UV-*vis* spectra absorption peak: 270.40nm.

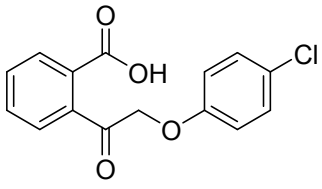
2-(2-(p-tolyloxy)acetyl)benzoic acid (1b).



1b

Prepared according General Procedure B. Light yellow solid (1.27g, 94%). Mp. 113-115°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.35 (s, 1H), 7.86 (d, J = 7.6 Hz, 1H), 7.78 (d, J = 4.0 Hz, 2H), 7.66 (td, J = 7.9, 6.4, 4.2 Hz, 1H), 7.02 (d, J = 8.4 Hz, 2H), 6.73 (d, J = 8.3 Hz, 2H), 4.40 (d, J = 33.8 Hz, 2H), 2.19 (s, 3H). **(Figure S13)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 168.3, 156.3, 148.0, 135.0, 131.1, 130.2, 127.6, 125.0, 123.9, 115.5, 115.1, 105.9, 70.9, 20.5. **(Figure S14)** HRMS: (EI) calcd for $C_{16}H_{14}O_4$ $[M+H]^+$: 271.0971. Found: 271.0976. Anal.calcd for: $C_{16}H_{14}O_4$: C 71.10, H 5.22; Found: C 71.12, H 5.21. FT-IR (KBr disc): v= 3333, 1751, 1514, 1246, 1227cm^{-1}. UV-*vis* spectra absorption peak: 274.50nm.

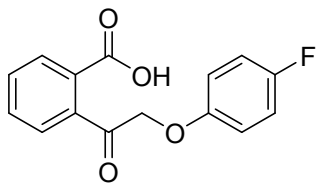
2-(2-(4-chlorophenoxy)acetyl)benzoic acid (1c).



1c

Prepared according General Procedure B. Light yellow solid (1.35g, 93%). Mp. 123-125°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.37 (s, 1H), 7.86 (d, J = 7.6 Hz, 1H), 7.79 (d, J = 4.4 Hz, 2H), 7.70 – 7.65 (m, 1H), 7.27 (d, J = 8.9 Hz, 2H), 6.89 (d, J = 8.8 Hz, 2H), 4.46 (d, J = 36.5 Hz, 2H). **(Figure S15)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 168.2, 157.2, 148.0, 135.0, 131.2, 129.7, 127.4, 125.4, 124.0, 121.5, 117.1, 105.7, 71.0. **(Figure S16)** HRMS: (EI) calcd for $C_{15}H_{11}ClO_4$ $[M+H]^+$: 291.0425. Found: 291.0430. Anal.calcd for: $C_{15}H_{11}ClO_4$: C 61.98, H 3.81; Found: C 61.96, H 3.83. FT-IR (KBr disc): v= 3356, 1751, 1493, 1250, 1227cm^{-1}. UV-*vis* spectra absorption peak: 274.10nm.

2-(2-(4-fluorophenoxy)acetyl)benzoic acid (1d).

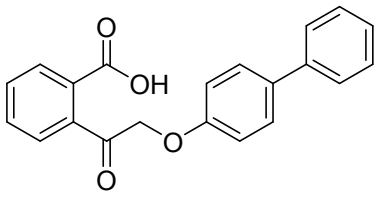


1c

Prepared according General Procedure B. White solid (1.30g, 95%). Mp. 152-154°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.36 (s, 1H), 7.87 (d, J = 7.5 Hz, 1H), 7.79 (s, 2H), 7.67 (dt, J = 8.0, 4.2 Hz, 1H), 7.06 (t, J = 8.8 Hz, 2H), 6.92 – 6.82 (m, 2H), 4.43 (d, J = 62.5 Hz, 2H). **(Figure S17)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 168.2, 1587.3 (d, J = 230 Hz), 154.7 (d, J = 3 Hz), 148.0, 135.1, 131.2, 127.5, 125.0, 123.9, 116.7, 116.6, 116.4,

116.1, 105.7, 71.3. **(Figure S18)** HRMS: (EI) calcd for $C_{15}H_{11}FO_4$ $[M+H]^+$: 275.0720. Found: 275.0725. Anal.calcd for: $C_{15}H_{11}FO_4$: C 65.69, H 4.04; Found: C 65.67, H 4.06. FT-IR (KBr disc): v= 3345, 1750, 1508, 1252, 1231cm^{-1}. UV-*vis* spectra absorption peak: 274.20nm.

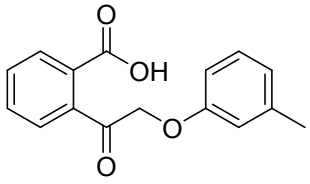
2-(2-([1,1'-biphenyl]-4-yloxy)acetyl)benzoic acid (1e).



1e

Prepared according General Procedure B. Light yellow solid (1.53g, 92%). Mp. 188-189°C.^{1}H NMR (400 MHz, DMSO-d_6) δ 8.38 (s, 1H), 7.88 (d, J = 7.5 Hz, 1H), 7.80 (d, J = 3.5 Hz, 2H), 7.68 (dt, J = 7.8, 4.1 Hz, 1H), 7.56 (dd, J = 14.7, 8.1 Hz, 4H), 7.41 (t, J = 7.6 Hz, 2H), 7.30 (t, J = 7.1 Hz, 1H), 6.95 (d, J = 8.5 Hz, 2H), 4.52 (s, 2H). **(Figure S19)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 168.3, 157.9, 148.1, 140.1, 135.8, 134.7, 133.7, 131.6, 131.2, 129.5, 129.3, 128.3, 128.2, 127.3, 126.7, 115.7, 70.8. **(Figure S20)** HRMS: (EI) calcd for $C_{21}H_{16}O_4$ $[M+H]^+$: 333.1128. Found: 333.1134. Anal.calcd for: $C_{21}H_{16}O_4$: C 75.89, H 4.85; Found: C 75.87, H 4.86.FT-IR (KBr disc): v= 3337, 1741, 1489, 1287, 1245cm^{-1}. UV-*vis* spectra absorption peak: 260.00nm.

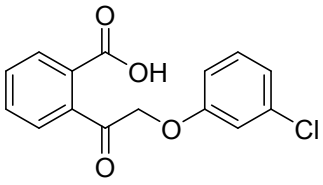
2-(2-(m-tolyloxy)acetyl)benzoic acid (1k).



1k

Prepared according General Procedure B. Gray solid (1.26g, 93%). Mp. 125-127°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.35 (s, 1H), 7.87 (d, J = 7.4 Hz, 1H), 7.79 (s, 2H), 7.68 (d, J = 7.5 Hz, 1H), 7.11 (t, J = 7.8 Hz, 1H), 6.73 (d, J = 7.3 Hz, 1H), 6.65 (s, 2H), 4.41 (d, J = 54.5 Hz, 2H), 2.22 (s, 3H). **(Figure S21)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 168.3, 158.3, 148.1, 139.5, 135.0, 131.1, 129.6, 127.4, 125.0, 123.9, 122.4, 115.9, 112.0, 105.9, 70.5, 21.4. **(Figure S22)** HRMS: (EI) calcd for $C_{16}H_{14}O_4$ $[M+H]^+$: 271.0971. Found: 271.0975. Anal.calcd for: $C_{16}H_{14}O_4$: C 71.10, H 5.22; Found: C 71.12, H 5.24. FT-IR (KBr disc): v= 3360, 1736, 1491, 1294, 1261cm^{-1}. UV-*vis* spectra absorption peak: 272.10nm.

2-(2-(3-chlorophenoxy)acetyl)benzoic acid (1l).

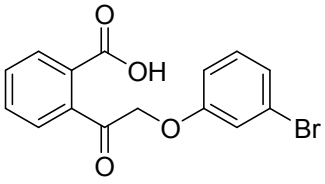


1l

Prepared according General Procedure B. Light yellow solid (1.38g, 95%). Mp. 116-118°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.37 (s, 1H), 7.86 (d, J = 7.6 Hz, 1H), 7.79 (d, J = 4.7 Hz, 2H), 7.67 (ddd, J = 8.1, 5.5, 3.0 Hz, 1H), 7.25 (t, J = 8.3 Hz, 1H), 7.03 – 6.94 (m, 2H), 6.88 – 6.81 (m, 1H), 4.52 (s, 2H). **(Figure S23)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 168.2, 159.2, 147.6, 139.2, 134.1, 131.3, 129.7, 125.2, 123.5, 121.6, 115.4, 114.3, 112.0, 105.3, 71.0. **(Figure S24)** HRMS: (EI) calcd for $C_{15}H_{11}ClO_4$ $[M+H]^+$: 291.0425. Found: 291.0420. Anal.calcd for: $C_{15}H_{11}ClO_4$: C 61.98, H 3.81; Found: C 61.99, H 3.83. FT-IR (KBr disc): v= 3293, 1742, 1595, 1290, 1236, 1202cm^{-1}. UV-*vis* spectra absorption peak: 273.60nm.

2-(2-(3-bromophenoxy)acetyl)benzoic acid (1m).

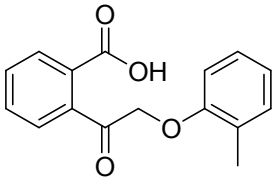
Prepared according General Procedure B. White solid (1.61g, 96%). Mp. 105-106°C.^{1}H NMR (400 MHz, DMSO-d_6) δ 8.38 (s, 1H), 7.86 (d, J = 7.5 Hz, 1H), 7.80



1m

(d, J = 3.4 Hz, 2H), 7.67 (dt, J = 8.0, 4.2 Hz, 1H), 7.19 (t, J = 8.0 Hz, 1H), 7.14 – 7.08 (m, 2H), 6.88 (d, J = 7.7 Hz, 1H), 4.57 (d, J = 7.9 Hz, 1H), 4.48 – 4.28 (m, 1H). **(Figure S25)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 168.2, 159.2, 147.9, 135.1, 131.6, 131.2, 127.4, 125.0, 124.6, 124.0, 122.4, 118.2, 114.7, 105.6, 70.8. **(Figure S26)** HRMS: (EI) calcd for $C_{15}H_{11}BrO_4$ $[M+H]^+$: 334.9920. Found: 334.9925. Anal.calcd for: $C_{15}H_{11}BrO_4$: C 53.76, H 3.31; Found: C 53.78, H 3.33. FT-IR (KBr disc): v= 3298, 1740, 1290, 1234, 1202cm^{-1}. UV-*vis* spectra absorption peak: 274.00nm.

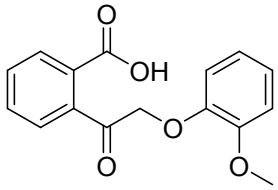
2-(2-(o-tolyloxy)acetyl)benzoic acid (1n).



1n

Prepared according General Procedure B. Light yellow solid (1.27g, 94%). Mp. 134-136°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.45 (s, 1H), 7.88 (d, J = 7.5 Hz, 1H), 7.84 – 7.73 (m, 2H), 7.67 (t, J = 7.4 Hz, 1H), 7.11 (t, J = 7.7 Hz, 1H), 7.02 (d, J = 7.2 Hz, 1H), 6.92 (d, J = 8.1 Hz, 1H), 6.81 (t, J = 7.4 Hz, 1H), 4.44 (s, 2H), 1.70 (s, 3H). **(Figure S27)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 168.3, 156.1, 148.1, 135.0, 131.1, 130.8, 127.4, 126.0, 124.8, 123.6, 121.3, 112.1, 106.2, 100.0, 70.4, 15.6. **(Figure S28)** HRMS: (EI) calcd for $C_{16}H_{14}O_4$ $[M+H]^+$: 271.0971. Found: 271.0966. Anal.calcd for: $C_{16}H_{14}O_4$: C 71.10, H 5.22; Found: C 71.12, H 5.25. FT-IR (KBr disc): v= 3462, 1736, 1296, 1256, 1125cm^{-1}. UV-*vis* spectra absorption peak: 261.60nm.

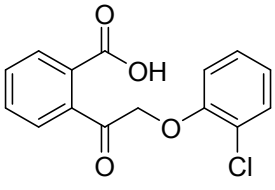
2-(2-(2-methoxyphenoxy)acetyl)benzoic acid (1o).



1o

Prepared according General Procedure B. White solid (1.32g, 92%). Mp. 148-149°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.28 (s, 1H), 7.85 (d, J = 7.5 Hz, 1H), 7.78 (d, J = 5.8 Hz, 2H), 7.66 (dd, J = 9.5, 3.5 Hz, 1H), 6.88 (t, J = 6.0 Hz, 3H), 6.81 (dt, J = 7.9, 3.9 Hz, 1H), 4.52 (d, J = 10.5 Hz, 1H), 4.30 (d, J = 10.5 Hz, 1H), 3.60 (s, 3H). **(Figure S29)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 168.3, 149.8, 148.2, 148.1, 134.8, 131.0, 127.7, 124.8, 124.0, 122.6, 121.3, 115.8, 113.5, 105.9, 72.2, 56.2. **(Figure S30)** HRMS: (EI) calcd for $C_{16}H_{14}O_5$ $[M+H]^+$: 287.0920. Found: 287.0924. Anal.calcd for: $C_{16}H_{14}O_5$: C 67.13, H 4.93; Found: C 67.14, H 4.95. FT-IR (KBr disc): v= 3281, 1742, 1506, 1258, 1128, 1020cm^{-1}. UV-*vis* spectra absorption peak: 273.95nm.

2-(2-(2-chlorophenoxy)acetyl)benzoic acid (1p).

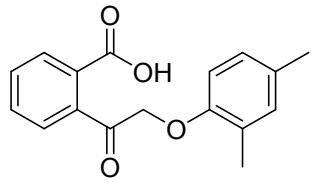


1p

Prepared according General Procedure B. Light yellow solid (1.40g, 96%). Mp. 115-117°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.42 (s, 1H), 7.86 (d, J = 7.6 Hz, 1H), 7.80 (d, J = 7.9 Hz, 2H), 7.69 – 7.64 (m, 1H), 7.32 (d, J = 7.6 Hz, 1H), 7.29 – 7.24 (m, 1H), 7.16 (d, J = 8.1 Hz, 1H), 6.96 – 6.90 (m, 1H), 4.61 (d, J = 9.0 Hz, 1H), 4.42 (d, J = 8.9 Hz, 1H). **(Figure S31)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 168.2, 153.5, 147.9, 134.9, 131.1, 130.3, 128.7, 127.7, 124.9, 123.9, 122.5, 121.8, 114.7, 105.6, 71.1. **(Figure S32)** HRMS: (EI) calcd for $C_{15}H_{11}ClO_4$ $[M+H]^+$: 291.0425. Found: 291.0429. Anal.calcd for: $C_{15}H_{11}ClO_4$: C 61.98, H 3.81; Found: C 61.97, H 3.83. FT-IR (KBr disc): v= 3273, 1740, 1487, 1294,

1254, 1076, 1014cm^{-1}. UV-*vis* spectra absorption peak: 273.50nm.

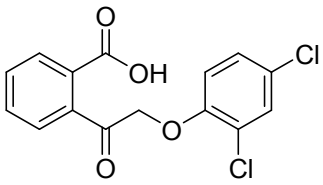
2-(2-(2,4-dimethylphenoxy)acetyl)benzoic acid (1q).



1q

Prepared according General Procedure B. Gray solid (1.29g, 91%). Mp. 119-120°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.40 (s, 1H), 7.86 (d, J = 7.6 Hz, 1H), 7.78 (dt, J = 14.6, 7.2 Hz, 2H), 7.69 – 7.64 (m, 1H), 6.89 (d, J = 8.1 Hz, 1H), 6.84 – 6.76 (m, 2H), 4.41 (d, J = 10.0 Hz, 1H), 4.33 (d, J = 10.0 Hz, 1H), 2.15 (s, 3H), 1.65 (s, 3H). **(Figure S33)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 168.3, 154.1, 148.2, 135.0, 131.5, 131.0, 129.9, 127.8, 127.5, 125.8, 124.8, 123.6, 112.1, 106.2, 70.6, 20.5, 15.5. **Figure S34)** HRMS: (EI) calcd for $C_{17}H_{16}O_4$ $[M+H]^+$: 285.1128. Found: 285.1123. Anal.calcd for: $C_{17}H_{16}O_4$: C 71.82, H 5.67; Found: C 71.84, H 5.68. FT-IR (KBr disc): v= 3254, 1748, 1481, 1277, 1287, 1242cm^{-1}. UV-*vis* spectra absorption peak: 273.95nm.

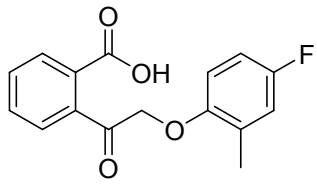
2-(2-(2,4-dichlorophenoxy)acetyl)benzoic acid (1r).



1r

Prepared according General Procedure B. Light yellow solid (1.46g, 90%). Mp. 121-122°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.43 (s, 1H), 7.86 (d, J = 7.4 Hz, 1H), 7.80 (s, 2H), 7.67 (dt, J = 8.0, 4.1 Hz, 1H), 7.50 – 7.43 (m, 1H), 7.34 (dd, J = 8.9, 2.4 Hz, 1H), 7.21 (d, J = 8.9 Hz, 1H), 4.70 – 4.38 (m, 2H). **(Figure S35)**^{13}C NMR (100 MHz, DMSO-d_6) δ= 168.3, 158.6, 148.2, 135.4, 133.0, 130.1, 130.0, 129.7, 128.9, 128.5, 128.1, 126.2, 123.9, 115.4, 71.0. **(Figure S36)** HRMS: (EI) calcd for $C_{15}H_{10}Cl_2O_4$ $[M+H]^+$: 325.0035. Found: 325.0039. Anal.calcd for: $C_{15}H_{10}Cl_2O_4$: C 55.41, H 3.10; Found: C 55.40, H 3.12. FT-IR (KBr disc): v= 3383, 1748, 1481, 1377, 1287, 1242, 1175cm^{-1}. UV-*vis* spectra absorption peak: 282.10nm.

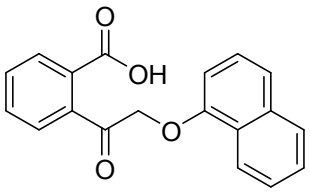
2-(2-(4-fluoro-2-methylphenoxy)acetyl)benzoic acid (1s).



1s

Prepared according General Procedure B. Light yellow solid (1.28g, 89%). Mp. 145-147°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.36 (s, 1H), 7.86 (d, J = 7.6 Hz, 1H), 7.78 (q, J = 7.3 Hz, 2H), 7.70 – 7.63 (m, 1H), 6.98 (t, J = 9.1 Hz, 1H), 6.76 (dd, J = 5.8, 2.8 Hz, 1H), 6.68 (dt, J = 7.5, 3.1 Hz, 1H), 4.44 (s, 2H), 2.15 (s, 3H). **(Figure S37)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 168.3, 155.9 (d, J = 230 Hz), 154.3 (d, J = 3 Hz), 149.2, 134.9, 131.1, 128.2, 125.5 (d, J = 9 Hz), 125.0, 124.0, 118.1 (d, J = 9 Hz), 115.7 (d, J = 20 Hz), 113.6 (d, J = 8 Hz), 105.8, 71.2, 71.2, 14.7 (d, J = 4 Hz). **(Figure S38)** HRMS: (EI) calcd for $C_{16}H_{13}FO_4$ $[M+H]^+$: 289.0877. Found: 289.0872. Anal.calcd for: $C_{16}H_{13}FO_4$: C 66.66, H 4.55; Found: C 66.64, H 4.57. FT-IR (KBr disc): v= 3300, 1742, 1506, 1238, 1198, 1038cm^{-1}. UV-*vis* spectra absorption peak: 275.05nm.

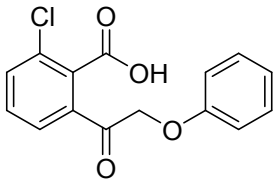
2-(2-(naphthalen-1-yloxy)acetyl)benzoic acid (1t).



1t

Prepared according General Procedure B. Gray solid (1.41g, 92%). Mp. 161-162°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.62 (s, 1H), 7.97 (d, J = 7.5 Hz, 1H), 7.81 (dd, J = 11.8, 7.0 Hz, 3H), 7.70 (t, J = 7.0 Hz, 1H), 7.55 (d, J = 8.0 Hz, 1H), 7.46 (t, J = 7.5 Hz, 2H), 7.37 (dt, J = 14.3, 7.6 Hz, 2H), 7.03 (d, J = 7.5 Hz, 1H), 4.69 (s, 2H). **(Figure S39)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 168.4, 153.5, 143.1, 136.8, 135.0, 134.4, 131.6, 131.2, 130.4, 130.0, 127.9, 126.9, 126.5, 125.8, 125.0, 121.2, 121.1, 106.3, 70.7. **(Figure S40)** HRMS: (EI) calcd for $C_{19}H_{14}O_4$ $[M+H]^+$: 307.0971. Found: 307.0966. Anal.calcd for: C 74.50, H 4.61; Found: C 74.52, H 4.60. FT-IR (KBr disc): v= 3505, 3057, 1753, 1508, 1402, 1290, 1271cm^{-1}. UV-*vis* spectra absorption peak: 282.15nm.

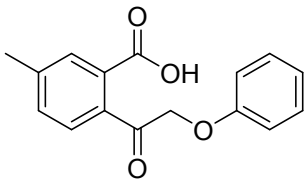
6-chloro-2-(2-phenoxyacetyl)benzoic acid (1u).



1u

Prepared according General Procedure B. White solid (1.35g, 93%). Mp. 121-126°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.42 (s, 1H), 7.81 – 7.76 (m, 2H), 7.70 (dd, J = 6.5, 2.3 Hz, 1H), 7.27 – 7.21 (m, 2H), 6.93 (t, J = 7.3 Hz, 1H), 6.86 (d, J = 7.9 Hz, 2H), 4.54 (d, J = 10.3 Hz, 1H), 4.37 (d, J = 10.3 Hz, 1H). **(Figure S41)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 165.2, 158.2, 150.7, 136.7, 132.2, 131.0, 129.9, 123.8, 122.9, 121.7, 115.3, 104.4, 70.3. **(Figure S42)** HRMS: (EI) calcd for $C_{15}H_{11}ClO_4$ $[M+H]^+$: 291.0425. Found: 291.0429. Anal.calcd for $C_{15}H_{11}ClO_4$: C 61.98, H 3.81; Found: C 61.97, H 3.82. FT-IR (KBr disc): v= 3356, 1746, 1499, 1260, 1239, 1123, 1040cm^{-1}. UV-*vis* spectra absorption peak: 276.30nm.

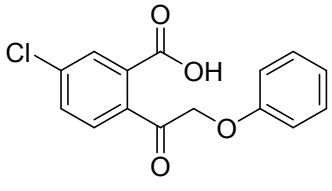
5-methyl-2-(2-phenoxyacetyl)benzoic acid (1v).



1v

Prepared according General Procedure B. Light yellow solid (1.27g, 95%). Mp. 136-137°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.48 (s, 1H), 7.73 (s, 1H), 7.57 (d, J = 7.4 Hz, 1H), 7.45 (d, J = 7.6 Hz, 1H), 7.27 (t, J = 7.5 Hz, 2H),6.97 – 6.87 (m, 3H), 4.59 (s, 2H), 2.41(s, 3H). **(Figure S43)** ^{13}C NMR (100 MHz, DMSO-d_6) δ=168.5, 158.4, 145.8, 141.2, 135.8, 131.9, 129.9, 123.7, 121.6, 118.0, 115.2, 105.6, 70.9, 21.2. **(Figure S44)** HRMS: (EI) calcd for $C_{16}H_{14}O_4$ $[M+H]^+$: 271.0971. Found: 271.0965. Anal.calcd for: $C_{16}H_{14}O_4$: C 71.10, H 5.22; Found: C 71.11, H 5.23. FT-IR (KBr disc): v= 3358, 1739, 1503, 1238, 1202cm^{-1}. UV-*vis* spectra absorption peak: 271.30nm.

5-chloro-2-(2-phenoxyacetyl)benzoic acid (1w).

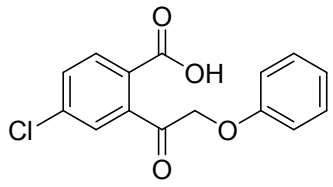


1w

Prepared according General Procedure B. White solid (1.34g, 94%). Mp. 125-126°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.52 (s, 1H), 7.95 (s, 1H), 7.89 (d, J = 8.2 Hz, 1H), 7.73 (d, J = 8.1 Hz, 1H), 7.25 (t, J = 7.9 Hz, 2H), 6.93 (t, J = 7.3 Hz, 1H), 6.85 (d, J = 8.2 Hz, 2H), 4.58 (d, J = 10.2 Hz, 1H), 4.39 (d, J = 10.2 Hz, 1H). **(Figure S45)** ^{13}C NMR (100 MHz, DMSO-d_6) δ=167.2, 158.2, 149.9, 140.1, 131.6, 129.9, 126.8, 126.4, 124.2, 121.7, 115.2, 105.4, 70.1. **(Figure S46)** HRMS: (EI) calcd for $C_{15}H_{11}ClO_4$ $[M+H]^+$: 291.0425. Found: 291.0420. Anal.calcd for: $C_{15}H_{11}ClO_4$: C

61.98, H 3.81; Found: C 61.99, H 3.80. FT-IR (KBr disc): v= 3319, 1744, 1499, 1256, 1233, 1200cm^{-1}. UV-*vis* spectra absorption peak: 270.15nm.

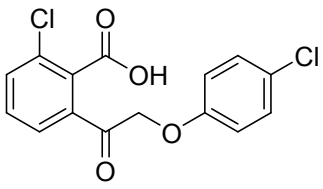
4-chloro-2-(2-phenoxyacetyl)benzoic acid (1x).



1x

Prepared according General Procedure B. Light yellow solid (1.37g, 92%). Mp. 136-137°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.49 (s, 1H), 7.92 (s, 1H), 7.84 (t, J = 7.7 Hz, 2H), 7.24 (t, J = 7.9 Hz, 2H), 6.93 (t, J = 7.3 Hz, 1H), 6.85 (d, J = 7.8 Hz, 2H), 4.46 (d, J = 47.0 Hz, 2H). **(Figure S47)** ^{13}C NMR (100 MHz, DMSO-d_6) δ=167.1, 158.1, 149.8, 140.0, 131.5, 129.8, 126.7, 126.3, 124.1, 121.6, 115.1, 105.3, 70.0. **(Figure S48)** HRMS: (EI) calcd for $C_{15}H_{11}ClO_4$ $[M+H]^+$: 291.0425. Found: 291.0429. Anal.calcd for: $C_{15}H_{11}ClO_4$: C 61.98, H 3.81; Found: C 61.99, H 3.80. FT-IR (KBr disc): v= 3320, 1746, 1502, 1248, 1198cm^{-1}. UV-*vis* spectra absorption peak: 270.05nm.

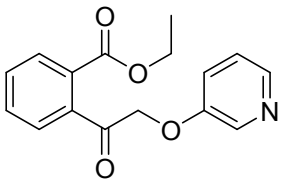
2-chloro-6-(2-(4-chlorophenoxy)acetyl)benzoic acid (1y).



1y

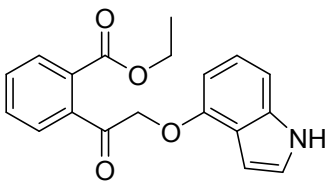
Prepared according General Procedure B. White solid (1.54g, 94%). Mp. 133-134°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.43 (s, 1H), 7.80 – 7.77 (m, 2H), 7.71 (dd, J = 6.5, 2.3 Hz, 1H), 7.28 (d, J = 8.9 Hz, 2H), 6.90 (d, J = 8.8 Hz, 2H), 4.53 (s, 2H). **(Figure S49)** ^{13}C NMR (100 MHz, DMSO-d_6) δ=168.2, 158.6, 148.4, 136.1, 134.4, 133.3, 129.8, 129.6, 129.3, 129.1, 126.4, 116.3, 70.4. **(Figure S50)** HRMS: (EI) calcd for $C_{15}H_{10}Cl_2O_4$ $[M+H]^+$: 325.0035. Found: 325.0039. Anal.calcd for: $C_{15}H_{10}Cl_2O_4$: C 55.41, H 3.10; Found: C 55.40, H 3.11. FT-IR (KBr disc): v= 3364, 1747, 1499, 1261, 1125, 1040cm^{-1}. UV-*vis* spectra absorption peak: 274.15nm.

Ethyl 2-(2-(pyridin-3-yloxy)acetyl)benzoate.



Prepared according General Procedure B. Light yellow oil (1.20g, 84%). ^{1}H NMR (400 MHz, DMSO-d_6) δ 7.91 – 7.88 (m, 1H), 7.76 – 7.71 (m, 1H), 7.68 – 7.63 (m, 1H), 7.60 – 7.57 (m, 1H), 7.38 (td, J = 7.6, 1.2 Hz, 1H), 7.23 (dt, J = 15.1, 6.8 Hz, 2H), 7.06 (d, J = 7.1 Hz, 1H), 5.22 (s, 2H), 4.53 (q, J = 7.1 Hz, 2H), 1.23 (t, J = 7.1 Hz, 3H). **(Figure S51)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 196.4, 167.3, 155.2, 141.7, 137.5, 134.5, 132.8, 130.7, 129.6, 128.6, 128.4, 124.1, 122.0, 70.2, 61.3, 14.0. **(Figure S52)** HRMS: (EI) calcd for $C_{16}H_{15}NO_4$ $[M+H]^+$: 286.1080. Found: 286.1086. Anal.calcd for: $C_{16}H_{15}NO_4$: C 67.36, H 5.30, N 4.91; Found: C 67.35, H 5.32,N 4.93.

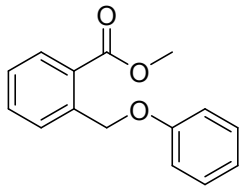
Ethyl 2-(2-((1H-indol-4-yl)oxy)acetyl)benzoate.



Prepared according General Procedure B. Brown oil (1.39g, 86%). ^{1}H NMR (400 MHz, DMSO-d_6) δ 11.51 (s, 1H), 8.04 – 7.93 (m, 1H), 7.55 (dtd, J = 22.2, 7.5, 1.3 Hz, 2H), 7.43 – 7.35 (m, 1H), 7.05 – 7.00 (m, 1H), 6.78 – 6.72 (m, 2H), 6.40 – 6.35 (m, 1H), 6.25 (dd, J = 5.8, 2.5 Hz, 1H), 5.06 (s, 2H), 4.32 (q, J = 7.1 Hz, 2H), 1.34 (t, J = 7.1 Hz, 3H). **(Figure S53)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 196.5, 167.4, 152.3, 136.6, 134.6, 132.9, 130.8, 129.7, 128.7, 128.5, 123.2, 123.1, 118.7, 106.8, 105.1, 99.8, 70.9, 61.4, 14.1. **(Figure S54)** HRMS:

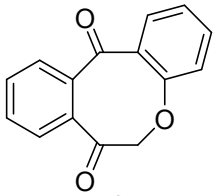
(EI) calcd for $C_{19}H_{17}NO_4$ $[M+H]^+$: 324.1237. Found: 324.1234. Anal.calcd for: $C_{19}H_{17}NO_4$: C 70.58, H 5.30, N 4.33; Found: C 70.56, H 5.28, N 4.32.

Methyl 2-(phenoxymethyl)benzoate.



White solid. Mp. 54-55°C ^{1}H NMR (400 MHz, Chloroform-d) δ 8.05 (d, *J* = 7.8 Hz, 1H), 7.79 (d, *J* = 7.8 Hz, 1H), 7.57 (t, *J* = 7.5 Hz, 1H), 7.38 (t, *J* = 7.5 Hz, 1H), 7.31 (t, *J* = 7.9 Hz, 2H), 7.05 – 6.96 (m, 3H), 5.53 (s, 2H), 3.91 (s, 3H). **(Figure S55)** ^{13}C NMR (101 MHz, Chloroform-*d*) δ 139.75, 132.62, 130.74, 129.51, 127.69, 127.42, 127.24, 120.96, 114.92, 68.09, 52.09. **(Figure S56)** HRMS: (EI) calcd for $C_{15}H_{14}NO_3$ $[M+H]^+$: 243.1022. Found: 243.1028. Anal.calcd for: $C_{15}H_{14}NO_3$: C 74.36, H 5.82; Found: C 74.35, H 5.80.

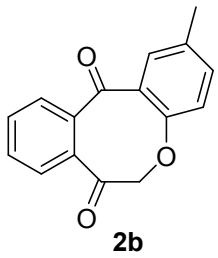
6H-dibenzo[b,e]oxocine-7,12-dione (2a).



2a

Prepared according General Procedure C. Light yellow solid (36.15mg, 76%). Mp. 79-80°C. ^{1}H NMR (400 MHz, DMSO- d_6) δ 7.89 (d, *J* = 7.6 Hz, 1H), 7.73 – 7.65 (m, 2H), 7.57 (td, *J* = 7.4, 1.2 Hz, 1H), 7.45 (dd, *J* = 7.4, 1.9 Hz, 1H), 7.33 (td, *J* = 7.6, 1.9 Hz, 1H), 7.10 (dd, *J* = 7.6, 1.9 Hz, 1H), 7.01 (td, *J* = 7.6, 2.0 Hz, 1H). 4.64 (d, *J* = 10.1 Hz, 1H), 4.31 (d, *J* = 10.1 Hz, 1H). **(Figure S57)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 173.5, 172.8, 157.1, 136.7, 135.5, 133.4, 133.3, 132.8, 130.7, 128.3, 127.9, 123.1, 115.1, 75.6. **(Figure S58)** HRMS: (EI) calcd for $C_{15}H_{10}O_3$ $[M+H]^+$: 239.0709. Found: 239.0713. Anal.calcd for: $C_{15}H_{10}O_3$: C 75.62, H 4.23; Found: C 75.63, H 4.22. FT-IR (KBr disc): v= 3320 , 1736 , 1498 , 1251 , 1211 cm^{-1}. UV-*vis* spectra absorption peak: 334.40nm.

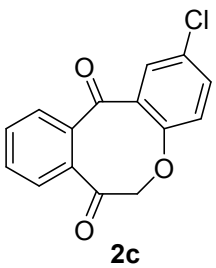
2-methyl-6H-dibenzo[b,e]oxocine-7,12-dione (2b).



2b

Prepared according General Procedure C. Gray solid (41.79mg, 83%). Mp. 87-88°C. ^{1}H NMR (400 MHz, DMSO- d_6) δ 8.07 (d, *J* = 6.3 Hz, 1H), 7.94 (d, *J* = 7.6 Hz, 1H), 7.92 – 7.85 (m, 1H), 7.71 (t, *J* = 7.2 Hz, 1H), 7.69 – 7.64 (m, 1H), 7.41 – 7.34 (m, 1H), 7.23 (d, *J* = 7.4 Hz, 1H), 4.61 (d, *J* = 10.1 Hz, 1H), 4.28 (d, *J* = 10.1 Hz, 1H), 2.28 (s, 3H). **(Figure S59)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 173.3, 172.6, 154.8, 136.4, 135.2, 134.8, 133.2, 132.5, 132.1, 130.6, 129.3, 128.4, 128.1, 115.5, 75.4, 20.7. **(Figure S60)** HRMS: (EI) calcd for $C_{16}H_{12}O_3$ $[M+H]^+$: 253.0865. Found: 253.0860. Anal.calcd for: $C_{16}H_{12}O_3$: C 76.18, H 4.79; Found: C 76.16, H 4.78. FT-IR (KBr disc): v= 3315, 1736, 1495, 1240, 1217cm^{-1}. UV-*vis* spectra absorption peak: 338.20nm.

2-chloro-6H-dibenzo[b,e]oxocine-7,12-dione (2c).

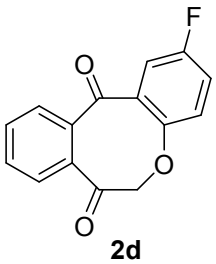


2c

Prepared according General Procedure C. Light yellow solid (39.31mg, 72%). Mp. 92-94°C. ^{1}H NMR (400 MHz, DMSO- d_6) δ 7.87 (d, *J* = 7.6 Hz, 1H), 7.80 (d, *J* = 4.4 Hz, 2H), 7.72 (d, *J* = 1.9 Hz, 1H), 7.54 (dd, *J* = 7.5, 1.9 Hz, 1H), 7.41 (dd, *J* = 7.6, 1.9 Hz, 1H), 7.14 (d, *J* = 7.6 Hz, 1H), 4.51 (dd, *J* = 72.7, 10.3 Hz, 2H). **(Figure S61)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 173.6, 172.9, 156.1, 136.7, 135.5, 134.9, 133.5, 132.8, 129.8, 128.9, 128.7, 128.4,

128.3, 115.9, 75.7.**(Figure S62)** HRMS: (EI) calcd for $C_{15}H_9ClO_3$ $[M+H]^+$: 273.0319. Found: 273.0325. Anal.calcd for: $C_{15}H_9ClO_3$: C 66.07, H 3.33; Found: C 66.08, H 3.32.FT-IR (KBr disc): v= 3318, 1724, 1476, 1293, 1224cm^{-1}. UV-*vis* spectra absorption peak: 337.80nm.

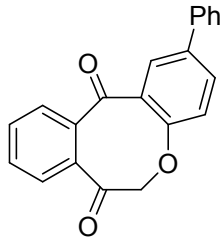
2-fluoro-6H-dibenzo[b,e]oxocine-7,12-dione (2d).



2d

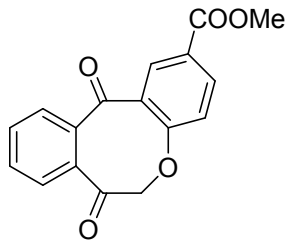
Prepared according General Procedure C. White solid (34.33mg, 67%). Mp. 124-126°C. ^{1}H NMR (400 MHz, DMSO- d_6) ^{1}H NMR (400 MHz, DMSO-d_6) δ 7.92 (d, J = 7.7 Hz, 1H), 7.83 (dd, J = 12.8, 6.2 Hz, 2H), 7.73 – 7.67 (m, 1H), 7.55 (dd, J = 7.5, 1.9 Hz, 1H), 7.27 (td, J = 9.2, 8.4, 1.9 Hz, 1H), 7.11 (dd, J = 7.4, 5.7 Hz, 1H), 4.67 (d, J = 10.7 Hz, 1H), 4.55 (d, J = 10.7 Hz, 1H). **(Figure S63)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 173.6, 172.7 (d, J = 3 Hz), 155.5 (d, J = 255 Hz), 154.8 (d, J = 3 Hz), 136.5, 135.3, 133.3, 132.6, 129.3 (d, J = 7 Hz), 128.5, 128.2, 120.0 (d, J = 20 Hz), 117.4 (d, J = 11 Hz), 117.3, 75.5. **(Figure S64)** ^{19}F NMR (376 MHz, DMSO-d_6) δ -35.25. **(Figure S65)** HRMS: (EI) calcd for $C_{15}H_9FO_3$ $[M+H]^+$: 257.0615. Found: 257.0619. Anal.calcd for: $C_{15}H_9FO_3$: C 70.31, H 3.54; Found: C 70.29, H 3.52. FT-IR (KBr disc): v= 3321, 1729, 1488, 1247, 1220cm^{-1}. UV-*vis* spectra absorption peak: 337.60nm.

2-phenyl-6H-dibenzo[b,e]oxocine-7,12-dione (2e).



2e

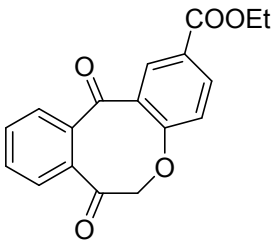
Prepared according General Procedure C. Light yellow solid (45.92mg, 73%). Mp. 169-170°C. ^{1}H NMR (400 MHz, DMSO- d_6) δ 7.98 (d, J = 7.5 Hz, 1H), 7.90 (d, J = 3.5 Hz, 2H),7.86 – 7.78 (m, 2H), 7.66 (ddd, J = 14.5, 7.5, 1.8 Hz, 3H), 7.43 (t, J = 7.4 Hz, 2H), 7.38 – 7.30 (m, 2H), 4.66 (d, J = 10.1 Hz, 1H), 4.48 (d, J = 10.1 Hz, 1H). **(Figure S66)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 173.5, 172.8, 156.2, 139.8, 136.6, 135.5, 135.4, 133.4, 132.7, 130.9, 128.8, 128.6, 128.6, 128.3, 127.7, 127.4, 127.3, 114.1, 75.6. **(Figure S67)** HRMS: (EI) calcd for $C_{21}H_{14}O_3$ $[M+H]^+$: 315.1022. Found: 315.1027. Anal.calcd for: $C_{21}H_{14}O_3$: C 80.24, H 4.49; Found: C 80.21, H 4.48. FT-IR (KBr disc): v= 3324, 1724, 1474, 1257, 1234cm^{-1}. UV-*vis* spectra absorption peak: 321.50nm. **Methyl 7,12-dioxo-7,12-dihydro-6H-dibenzo[b,e]oxocine-2-carboxylate (2f).**



2f

Prepared according General Procedure C. Light yellow solid (39.11mg, 66%). Mp. 112-113°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 7.89 (td, J = 7.3, 1.9 Hz, 1H), 7.76 (dd, J = 7.3, 1.9 Hz, 1H), 7.73 – 7.67 (m, 2H), 7.55 (dd, J = 7.4, 2.0 Hz, 1H), 7.28 (dd, J = 7.4, 1.9 Hz, 1H), 6.90 (d, J = 7.6 Hz, 1H), 4.89 (d, J = 10.7 Hz, 1H), 4.71 (d, J = 10.7 Hz, 1H), 3.47 (s, 3H). **(Figure S68)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 173.5, 172.3, 166.0, 158.1, 136.6, 135.4, 133.3, 132.7, 131.6, 129.8, 129.7, 128.5, 128.2, 125.2, 114.6, 75.6, 52.1. **(Figure S69)** HRMS: (EI) calcd for $C_{17}H_{12}O_5$ $[M+H]^+$: 297.0764. Found: 297.0768. Anal.calcd for: $C_{17}H_{12}O_5$: C 68.92, H 4.08; Found: C 68.93, H 4.06.

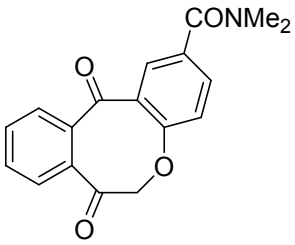
Ethyl 7,12-dioxo-7,12-dihydro-6H-dibenzo[b,e]oxocine-2-carboxylate (2g).



2g

Prepared according General Procedure C. Light yellow solid (42.82mg, 69%). Mp. 101-102°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 7.87 (td, J = 7.3, 1.9 Hz, 1H), 7.75 – 7.64 (m, 3H), 7.52 (dd, J = 7.5, 2.0 Hz, 1H), 7.26 (dd, J = 7.4, 1.9 Hz, 1H), 6.90 – 6.82 (m, 1H), 4.89 (d, J = 10.6 Hz, 1H), 4.69 (d, J = 10.6 Hz, 1H), 3.89 (q, J = 5.9 Hz, 2H), 0.88 (s, 3H). **(Figure S70)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 173.5, 172.3, 165.4, 158.3, 136.7, 135.4, 133.4, 132.8, 131.4, 130.3, 130.1, 128.6, 128.3, 125.5, 114.8, 75.6, 61.0, 14.4. **(Figure S71)** HRMS: (EI) calcd for $C_{18}H_{14}O_5$ $[M+H]^+$: 311.0920. Found: 311.0916. Anal.calcd for: $C_{18}H_{14}O_5$: C 69.67, H 4.55; Found: C 69.68, H 4.52.

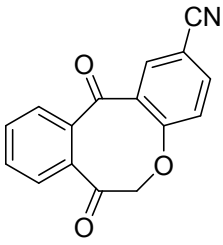
N,N-dimethyl-7,12-dioxo-7,12-dihydro-6H-dibenzo[b,e]oxocine-2-carboxamide (2h).



2h

Prepared according General Procedure C. White solid (40.21mg, 65%). Mp. 134-135°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 7.88 (td, J = 7.3, 1.9 Hz, 1H), 7.68 (td, J = 7.6, 1.9 Hz, 1H), 7.57 – 7.50 (m, 3H), 7.30 (dd, J = 7.4, 1.9 Hz, 1H), 6.87 (d, J = 7.4 Hz, 1H), 4.89 (d, J = 10.1 Hz, 1H), 4.71 d, J = 10.1 Hz, 1H), 2.46 (s, 6H). **(Figure S72)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 174.3, 173.5, 171.9, 157.8, 137.4, 136.2, 134.2, 133.5, 133.3, 129.3, 129.0, 128.6, 128.4, 128.4, 115.0, 76.4, 38.0. **(Figure S73)** HRMS: (EI) calcd for $C_{18}H_{15}NO_4$ $[M+H]^+$: 310.1080. Found: 310.1083. Anal.calcd for: $C_{18}H_{15}NO_4$: C 69.89, H 4.89, N 4.53; Found: C 69.87, H 4.91, N 4.52.

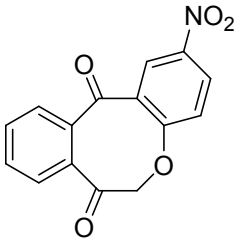
7,12-dioxo-7,12-dihydro-6H-dibenzo[b,e]oxocine-2-carbonitrile (2i).



2i

Prepared according General Procedure C. White solid (32.64mg, 62%). Mp. 86-87°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 7.90 (td, J = 7.3, 1.9 Hz, 1H), 7.74 – 7.64 (m, 2H), 7.54 (ddd, J = 7.4, 5.1, 1.9 Hz, 2H), 7.27 (dd, J = 7.6, 1.9 Hz, 1H), 7.03 (d, J = 7.4 Hz, 1H), 4.91 (d, J = 10.1 Hz, 1H), 4.73 (d, J = 10.1 Hz, 1H). **(Figure S74)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 173.5, 171.8, 157.3, 137.6, 136.7, 135.5, 133.4, 132.8, 132.0, 131.8, 128.6, 128.3, 119.5, 116.2, 105.3, 75.6. **(Figure S75)** HRMS: (EI) calcd for $C_{16}H_9NO_3$ $[M+H]^+$: 264.0661. Found: 264.0665. Anal.calcd for: $C_{16}H_9NO_3$: C 73.00, H 3.45, N 5.32; Found: C 72.98, H 3.46, N 5.30.

2-nitro-6H-dibenzo[b,e]oxocine-7,12-dione (2j).

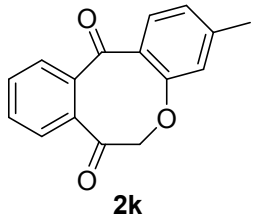


2j

Prepared according General Procedure C. Gray solid (33.42mg, 59%). Mp. 64-65°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.18 (d, J = 2.0 Hz, 1H), 8.11 (dd, J = 7.6, 1.9 Hz, 1H), 7.90 (td, J = 7.3, 1.9 Hz, 1H), 7.70 (td, J = 7.6, 1.9 Hz, 1H), 7.55 (dd, J = 7.4, 2.0 Hz, 1H), 7.29 (dd, J = 7.5, 2.0 Hz, 1H), 7.05 (d, J = 7.6 Hz, 1H), 4.91 (d, J = 10.7 Hz, 1H), 4.73 (d, J = 10.7 Hz, 1H). **(Figure S76)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 173.6, 172.8, 159.2, 143.7, 136.7,

135.5, 133.5, 132.8, 130.8, 129.9, 128.7, 128.4, 126.3, 116.1, 75.7. **(Figure S77)** HRMS: (EI) calcd for $C_{15}H_9NO_5$ $[M+H]^+$: 284.0560. Found: 284.0563. Anal.calcd for: $C_{15}H_9NO_5$: C 63.61, H 3.20, N 4.95; Found: C 63.60, H 3.22, N 4.97.

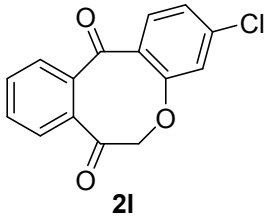
3-methyl-6H-dibenzo[b,e]oxocine-7,12-dione (2k).



2k

Prepared according General Procedure C. White solid (37.86mg, 75%). Mp. 102-103 °C. ^{1}H NMR (400 MHz, DMSO- d_6) ^{1}H NMR (400 MHz, DMSO-d_6) δ 7.94 (d,*J*= 7.4 Hz, 1H), 7.86 (s, 2H), 7.72 – 7.65 (m, 1H), 7.29 (d, *J* = 7.6 Hz, 1H), 7.03 (s, 1H), 6.91 – 6.84 (m, 1H), 4.53 (d, *J* = 10.1 Hz, 1H), 4.39 (d, *J* = 10.1 Hz, 1H), 2.30 (s, 3H). **(Figure S78)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 173.5, 172.8, 160.0, 145.3, 136.6, 135.4, 133.4, 132.7, 131.1, 128.6, 128.3, 125.1, 121.8, 118.4, 75.6, 21.5. **(Figure S79)** HRMS: (EI) calcd for $C_{16}H_{12}O_3$ $[M+H]^+$: 253.0865. Found: 253.0860. Anal.calcd for: $C_{16}H_{12}O_3$: C 76.18, H 4.79; Found: C 76.16, H 4.81. FT-IR (KBr disc): v= 3274, 1719, 1574, 1301, 1224, 1182cm^{-1}. UV-*vis* spectra absorption peak: 335.80nm.

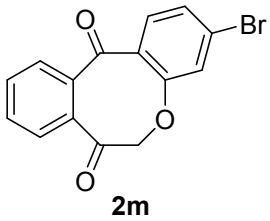
3-chloro-6H-dibenzo[b,e]oxocine-7,12-dione (2l).



2l

Prepared according General Procedure C. Gray solid (36.02mg, 66%). Mp. 98-99°C. ^{1}H NMR (400 MHz, DMSO- d_6) δ 7.96 (d, *J* = 7.6 Hz, 1H), 7.88 (d, *J* = 4.7 Hz, 2H), 7.70 (td, *J* = 7.2, 2.6 Hz, 1H), 7.29 (d, *J* = 7.7 Hz, 2H), 7.14 (dd, *J* = 7.6, 1.9 Hz, 1H), 4.66 (d, *J* = 10.1 Hz, 1H), 4.37 (d, *J* = 10.1 Hz, 1H). **(Figure S80)** ^{13}C NMR (100 MHz, DMSO-d_6) δ=173.3, 172.8 , 160.9, 138.9, 136.6, 135.4, 133.4, 132.7, 130.5, 128.6, 128.3, 126.2, 123.2, 116.8, 75.6. **(Figure S81)** HRMS: (EI) calcd for $C_{15}H_9ClO_3$ $[M+H]^+$: 273.0319. Found: 273.0313. Anal.calcd for: $C_{15}H_9ClO_3$: C 66.07, H 3.33; Found: C 66.06, H 3.34. FT-IR (KBr disc): v= 3277, 1724, 1575, 1275, 1223, 1183cm^{-1}. UV-*vis* spectra absorption peak: 337.85nm.

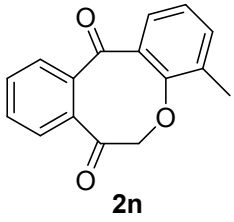
3-bromo-6H-dibenzo[b,e]oxocine-7,12-dione (2m).



2m

Prepared according General Procedure C. Light yellow solid (39.91mg, 63%). Mp. 91-93°C. ^{1}H NMR (400 MHz, DMSO- d_6) δ 7.85 (d, *J* = 7.5 Hz, 1H), 7.80 (d, *J* = 3.4 Hz, 2H), 7.54 (td, *J* = 7.6, 2.1 Hz, 2H), 7.38 (d, *J* = 2.0 Hz, 1H), 7.29 (dd, *J* = 7.6, 1.9 Hz, 1H), 4.62 (d, *J* = 10.1 Hz, 1H), 4.44 (d, *J* = 10.1 Hz, 1H). **(Figure S82)** ^{13}C NMR (100 MHz, DMSO-d_6) δ=173.4, 172.6, 160.8, 136.5, 135.3, 133.3, 132.6, 131.2, 131.0, 128.5, 128.2, 123.8, 123.3, 118.3, 75.5. **(Figure S83)** HRMS: (EI) calcd for $C_{15}H_9BrO_3$ $[M+H]^+$: 316.9814. Found: 316.9819. Anal.calcd for: $C_{15}H_9BrO_3$: C 56.81, H 2.86; Found: C 56.83, H 2.87. FT-IR (KBr disc): v= 3281, 1716, 1300, 1247, 1185cm^{-1}. UV-*vis* spectra absorption peak: 338.20nm.

4-methyl-6H-dibenzo[b,e]oxocine-7,12-dione (2n).

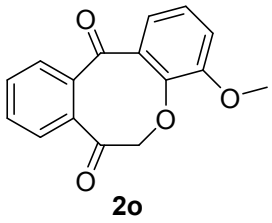


2n

Prepared according General Procedure C. White solid (31.32mg, 62%). Mp. 112-113°C. ^{1}H NMR (400 MHz, DMSO- d_6) δ 7.97 (d, *J* = 7.5 Hz, 1H), 7.92 – 7.83 (m, 2H), 7.76 (t, *J* = 7.4 Hz, 1H), 7.70 (dd, *J* = 7.4, 2.0 Hz, 1H), 7.43 – 7.34 (m, 1H), 7.20 (t, *J* = 7.4 Hz, 1H), 4.58 (d, *J* = 10.1 Hz, 1H), 4.41 (d, *J* = 10.1 Hz, 1H), 1.79 (s,

3H). **(Figure S84)** ^{13}C NMR (100 MHz, DMSO-d_6) δ=173.4, 172.7, 149.9, 136.5, 135.3, 135.3, 133.3, 132.6, 129.3, 128.5, 128.2, 127.2, 126.9, 125.4, 77.9, 15.1. **(Figure S85)** HRMS: (EI) calcd for $C_{16}H_{12}O_3$ $[M+H]^+$: 253.0865. Found: 253.0869. Anal.calcd for: $C_{16}H_{12}O_3$: C 76.18, H 4.79; Found: C 76.17, H 4.82. FT-IR (KBr disc): v= 3441, 1719, 1296, 1256, 1125cm^{-1}. UV-*vis* spectra absorption peak: 324.80nm.

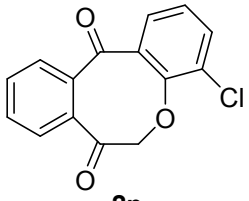
4-methoxy-6H-dibenzo[b,e]oxocine-7,12-dione (2o).



2o

Prepared according General Procedure C. White solid (32.22mg, 60%). Mp. 126-128°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 7.91 (d, J = 7.6 Hz, 1H), 7.87 (d, J = 7.6 Hz, 1H), 7.83 – 7.77 (m, 1H), 7.69 (t, J = 7.4 Hz, 1H), 7.54 (dd, J = 7.3, 2.2 Hz, 1H), 7.27 – 7.17 (m, 2H). 4.70 (d, J = 10.9 Hz, 1H), 4.49 (d, J = 10.9 Hz, 1H), 3.65 (s, 3H). **(Figure S86)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 173.6, 172.9, 152.2, 150.3, 136.7, 135.5, 133.5, 133.3, 132.8, 128.7, 128.4, 123.3, 120.7, 116.1, 78.1, 56.3. **(Figure S87)** HRMS: (EI) calcd for $C_{16}H_{12}O_4$ $[M+H]^+$: 269.0815. Found: 269.0810. Anal.calcd for: $C_{16}H_{12}O_4$: C 71.64, H 4.51; Found: C 71.66, H 4.50. FT-IR (KBr disc): v= 3265, 1739, 1481, 1248, 1117cm^{-1}. UV-*vis* spectra absorption peak: 338.10nm.

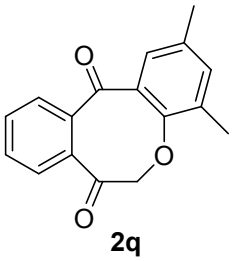
4-chloro-6H-dibenzo[b,e]oxocine-7,12-dione (2p).



2p

Prepared according General Procedure C. Light yellow solid (30.05mg, 55%). Mp. 97-99°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 7.93 (dd, J = 14.7, 7.6 Hz, 2H), 7.83 (t, J = 7.5 Hz, 1H), 7.70 (t, J = 7.5 Hz, 1H), 7.63 (dd, J = 7.4, 2.0 Hz, 1H), 7.56 (dd, J = 7.6, 1.9 Hz, 1H), 7.21 (t, J = 7.4 Hz, 1H). 4.75 (dd, J = 66.2, 10.5 Hz, 2H). **(Figure S88)** ^{13}C NMR (100 MHz, DMSO-d_6) δ=173.4, 172.7, 160.8, 138.8, 136.5, 135.3, 133.3, 132.6, 130.4, 128.4, 128.2, 126.1, 123.1, 116.7, 75.5. **(Figure S89)** HRMS: (EI) calcd for $C_{15}H_9ClO_3$ $[M+H]^+$: 273.0319. Found: 273.0313. Anal.calcd for: $C_{15}H_9ClO_3$: C 66.07, H 3.33; Found: C 66.06, H 3.35. FT-IR (KBr disc): v= 3260, 1731, 1469, 1286, 1247cm^{-1}. UV-*vis* spectra absorption peak: 336.80nm.

2,4-dimethyl-6H-dibenzo[b,e]oxocine-7,12-dione (2q).



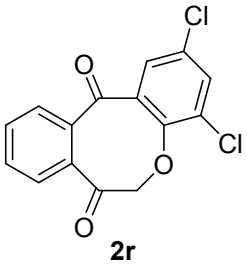
2q

Prepared according General Procedure C. White solid (30.90mg, 58%). Mp. 99-101°C.^{1}H NMR (400 MHz, DMSO- d_6) 7.86 (d, J = 7.6 Hz, 1H), 7.78 (dt, J = 14.6, 7.2 Hz, 2H), 7.69 – 7.64 (m, 1H), 7.39 (dd, J = 7.5, 2.0 Hz, 1H), 7.23 (s, 1H), 7.08 – 7.02 (m, 1H), 4.51 (d, J = 10.1 Hz, 1H), 4.33 (d, J = 10.1 Hz, 1H), 2.14 (s, 3H), 1.65 (s, 3H). **(Figure S90)** ^{13}C NMR (100 MHz, DMSO-d_6) δ=173.6 , 172.9 , 147.7 , 136.7 , 135.5 , 133.5 , 132.8 , 132.3 , 130.7 , 128.7 , 128.4 , 126.7 , 126.5 , 78.1 , 21.2 , 16.5 . **(Figure S91)** HRMS: (EI) calcd for $C_{17}H_{14}O_3$ $[M+H]^+$: 267.1022. Found: 267.1026. Anal.calcd for: $C_{17}H_{14}O_3$: C 76.68, H 5.30; Found: C 76.69, H 5.31. FT-IR (KBr disc): v= 3238, 1739, 1472, 1257, 1222, 1209cm^{-1}. UV-*vis* spectra absorption peak: 336.90nm.

2,4-dichloro-6H-dibenzo[b,e]oxocine-7,12-dione (2r).

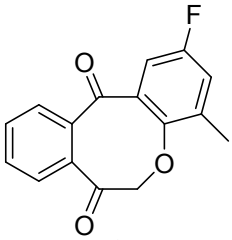
Prepared according General Procedure C. Light yellow solid (31.95mg, 52%). Mp. 94-96°C. ^{1}H NMR (400 MHz, DMSO- d_6) δ 7.94 (d, J = 7.4 Hz, 1H), 7.89 (s, 2H), 7.71 (d,

J = 1.9 Hz, 1H), 7.62 (dt, *J* = 4.2, 2.6 Hz, 2H), 4.69 (d, *J* = 10.1 Hz, 1H), 4.51 (d, *J* = 10.1 Hz, 1H). **(Figure S92)** ^{13}C NMR (100 MHz, DMSO-d_6) δ=173.5, 172.8, 159.6, 136.6, 135.4, 134.0, 133.4, 132.7, 130.1, 129.1, 129.0, 128.6, 128.3, 125.6, 78.0. **(Figure S93)** HRMS: (EI) calcd for $C_{15}H_8Cl_2O_3$ $[M+H]^+$: 306.9929. Found: 306.9923. Anal.calcd for: $C_{15}H_8Cl_2O_3$: C 58.66, H 2.63; Found: C 58.63, H 2.64. FT-IR (KBr disc): v= 3362, 1736, 1476, 1365, 1237, 1226, 1165cm^{-1}. UV-*vis* spectra absorption peak: 347.20nm.



2r

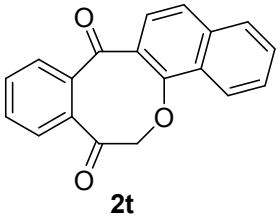
2-fluoro-4-methyl-6H-dibenzo[b,e]oxocine-7,12-dione (2s).



2s

Prepared according General Procedure C. White solid (31.33mg, 58%). Mp. 121-122°C. ^{1}H NMR (400 MHz, DMSO- d_6) 7.96 (d, *J* = 7.6 Hz, 1H), 7.88 (q, *J* = 7.3 Hz, 2H), 7.64 (td, *J* = 7.8, 7.3, 1.8 Hz, 2H), 7.15 (d, *J* = 9.0 Hz, 1H), 4.60 (d, *J* = 10.1 Hz, 1H), 4.42 (d, *J* = 10.1 Hz, 1H), 2.25 (s, 3H). **(Figure S94)** ^{13}C NMR (100 MHz, DMSO-d_6) δ=173.6, 172.1 (d, *J* = 3 Hz), 160.0 (d, *J* = 252 Hz), 147.7, 136.6, 135.4, 133.4, 132.7, 130.7 (d, *J* = 8 Hz), 128.6, 128.3, 127.4 (d, *J* = 7 Hz), 119.4 (d, *J* = 21 Hz), 115.7 (d, *J* = 20 Hz), 78.0, 16.4. **(Figure S95)** HRMS: (EI) calcd for $C_{16}H_{11}FO_3$ $[M+H]^+$: 271.0771. Found: 271.0777. Anal.calcd for: $C_{16}H_{11}FO_3$: C 71.11, H 4.10; Found: C 71.12, H 4.11. FT-IR (KBr disc): v= 3287, 1733, 1487, 1224, 1185cm^{-1}. UV-*vis* spectra absorption peak: 335.10nm.

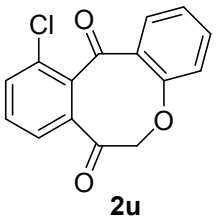
8H-benzo[e]naphtho[1,2-b]oxocine-9,14-dione (2t).



2t

Prepared according General Procedure C. Light yellow solid (35.19mg, 61%). Mp. 132-134°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.27 (d, *J* = 7.5 Hz, 1H), 8.13 (s, 2H), 8.09 (s, 1H), 8.04 (d, *J* = 7.2 Hz, 1H), 7.94 (d, *J* = 7.5 Hz, 1H), 7.83 – 7.76 (m, 2H), 7.67 (dtd, *J* = 20.9, 7.4, 1.4 Hz, 2H), 4.85 (d, *J* = 10.1 Hz, 1H), 4.67 (d, *J* = 10.1 Hz, 1H). **(Figure S96)** ^{13}C NMR (100 MHz, DMSO-d_6) δ=172.5, 171.6, 158.8, 136.6, 135.4, 133.9, 133.4, 132.7, 129.0, 128.6, 128.3, 128.2, 128.0, 127.3, 126.7, 126.0, 126.0, 122.5, 78.4. **(Figure S97)** HRMS: (EI) calcd for $C_{19}H_{12}O_3$ $[M+H]^+$: 289.0865. Found: 289.0869. Anal.calcd for: $C_{19}H_{12}O_3$: C 79.16, H 4.20; Found: C 79.17, H 4.22. FT-IR (KBr disc): v= 3408, 3024, 1737, 1489, 1308, 1257, 1236cm^{-1}. UV-*vis* spectra absorption peak: 346.30nm.

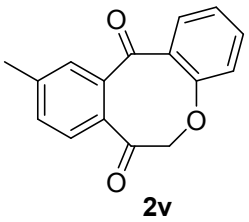
11-chloro-6H-dibenzo[b,e]oxocine-7,12-dione (2u).



2u

Prepared according General Procedure C. Gray solid (33.25mg, 61%). Mp. 98-100°C. ^{1}H NMR (400 MHz, DMSO- d_6) δ 7.90 – 7.80 (m, 3H), 7.69 – 7.59 (m, 2H), 7.41 (dd, *J* = 7.5, 2.0 Hz, 1H), 7.35 (td, *J* = 7.4, 1.9 Hz, 1H), 4.62 (d, *J* = 10.1 Hz, 1H), 4.44 (d, *J* = 10.1 Hz, 1H). **(Figure S98)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 175.4, 173.2, 157.1, 139.2, 136.1, 135.3, 133.7, 133.4, 130.8, 129.2, 128.5, 128.1, 123.2, 115.2, 75.7. **(Figure S99)** HRMS: (EI) calcd for $C_{15}H_9ClO_3$ $[M+H]^+$: 273.0319. Found: 273.0325. Anal.calcd for: $C_{15}H_9ClO_3$: C 66.07, H 3.33; Found: C 66.09, H 3.32. FT-IR (KBr disc): v= 3337, 1735, 1487, 1245, 1226, 1111cm^{-1}. UV-*vis* spectra absorption peak: 342.15nm.

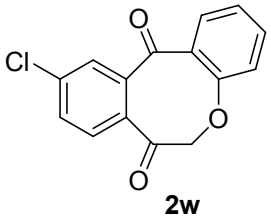
10-methyl-6H-dibenzo[b,e]oxocine-7,12-dione (2v).



2v

Prepared according General Procedure C. White solid (36.82mg, 73%). Mp. 117-118°C. ^{1}H NMR (400 MHz, DMSO- d_6) δ 7.78 – 7.70 (m, 2H), 7.51 (dd, J = 9.5, 7.6 Hz, 2H), 7.42 – 7.35 (m, 1H), 7.31 (dd, J = 7.6, 1.9 Hz, 1H), 7.25 – 7.18 (m, 1H)，4.76 (d, J = 10.1 Hz, 1H), 4.58 (d, J = 10.1 Hz, 1H), 2.08 (s, 3H). **(Figure S100)** ^{13}C NMR (100 MHz, DMSO-d_6) δ=173.9, 173.1, 157.0, 143.2, 136.5, 134.4, 133.2, 130.6, 129.7, 129.1, 128.8, 127.8, 123.1, 115.0, 75.6, 21.3. **(Figure S101)** HRMS: (EI) calcd for $C_{16}H_{12}O_3$ $[M+H]^+$: 253.0865. Found: 253.0869. Anal.calcd for: $C_{16}H_{12}O_3$: C 76.18, H 4.79; Found: C 76.19, H 4.80. FT-IR (KBr disc): v= 3339, 1730, 1487, 1201, 1189cm^{-1}. UV-*vis* spectra absorption peak: 335.10nm.

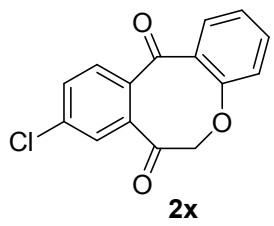
10-chloro-6H-dibenzo[b,e]oxocine-7,12-dione (2w).



2w

Prepared according General Procedure C. Light yellow solid (35.44mg, 65%). Mp. 102-103°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 7.75 (dd, J = 7.6, 1.8 Hz, 2H), 7.65 – 7.54 (m, 3H), 7.36 (dd, J = 7.5, 2.0 Hz, 1H), 7.25 (td, J = 7.4, 1.9 Hz, 1H), 4.65 (d, J = 10.1 Hz, 1H), 4.47 (d, J = 10.1 Hz, 1H). **(Figure S102)** ^{13}C NMR (100 MHz, DMSO-d_6) δ=173.4, 172.0, 157.1, 139.3, 136.5, 136.5, 133.3, 130.7, 130.0, 129.3, 129.0, 127.9, 123.2, 115.1, 75.7. **(Figure S103)** HRMS: (EI) calcd for $C_{15}H_9ClO_3$ $[M+H]^+$: 273.0319. Found: 273.0312. Anal.calcd for: $C_{15}H_9ClO_3$: C 66.07, H 3.33; Found: C 66.05, H 3.31. FT-IR (KBr disc): v= 3295, 1732, 1478, 1228, 1215, 1197cm^{-1}. UV-*vis* spectra absorption peak: 333.60nm.

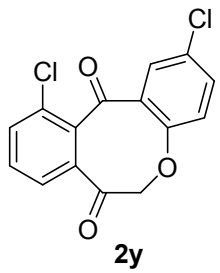
9-chloro-6H-dibenzo[b,e]oxocine-7,12-dione (2x).



2x

Prepared according General Procedure C. White solid (34.85mg, 64%). Mp. 115-116°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 7.83 – 7.74 (m, 2H), 7.63 – 7.50 (m, 3H), 7.31 (dd, J = 7.6, 1.9 Hz, 1H), 7.20 (td, J = 7.6, 1.9 Hz, 1H), 4.61 (d, J = 10.1 Hz, 1H), 4.44 (d, J = 10.1 Hz, 1H). **(Figure S104)** ^{13}C NMR (100 MHz, DMSO-d_6) δ=175.6, 173.8, 157.1, 137.1, 136.1, 133.6, 133.3, 133.3, 130.7, 129.7, 129.4, 127.9, 123.2, 115.1, 75.7. **(Figure S105)** HRMS: (EI) calcd for $C_{15}H_9ClO_3$ $[M+H]^+$: 273.0319. Found: 273.0312. Anal.calcd for: $C_{15}H_9ClO_3$: C 66.07, H 3.33; Found: C 66.06, H 3.34. FT-IR (KBr disc): v= 3297, 1734, 1480, 1254, 1184cm^{-1}. UV-*vis* spectra absorption peak: 333.55nm.

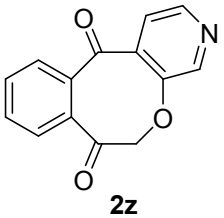
2,11-dichloro-6H-dibenzo[b,e]oxocine-7,12-dione (2y).



2y

Prepared according General Procedure C. Light yellow solid (35.03mg, 57%). Mp. 131-132°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 7.96 – 7.90 (m, 2H), 7.87 (dd, J = 7.4, 2.0 Hz, 1H), 7.74 – 7.66 (m, 2H), 7.40 (d, J = 7.4 Hz, 1H), 4.67 (d, J = 10.1 Hz, 1H), 4.49 (d, J = 10.1 Hz, 1H). **(Figure S106)** ^{13}C NMR (100 MHz, DMSO-d_6) δ=170.3, 168.8, 156.1, 139.1, 136.0, 135.2, 134.9, 133.6, 129.7, 129.1, 128.8, 128.4, 128.3, 115.9, 75.6. **(Figure S107)** HRMS: (EI) calcd for $C_{15}H_8Cl_2O_3$ $[M+H]^+$: 306.9929. Found: 306.9937 Anal.calcd for: $C_{15}H_8Cl_2O_3$: C 58.66, H 2.63; Found: C58.65, H 2.64. FT-IR (KBr disc): v= 3324, 1734, 1483, 1235, 1083cm^{-1}. UV-*vis* spectra absorption peak: 338.65nm.

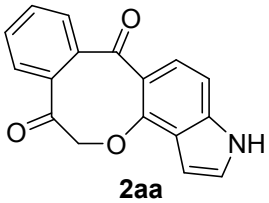
6H-benzo[5,6]oxocino[2,3-c]pyridine-7,12-dione (2z).



2z

Prepared according General Procedure C. Light yellow solid (23.51mg, 49%). Mp. 92-93°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 7.53 – 7.34 (m, 6H), 7.30 (d, J = 7.7 Hz, 1H), 4.97 (d, J = 10.9 Hz, 1H), 4.61 (d, J = 10.9 Hz, 1H). **(Figure S108)** ^{13}C NMR (100 MHz, DMSO-d_6) δ=175.3, 173.9, 150.5, 144.3, 143.7, 137.7, 136.7, 135.4, 133.4, 132.8, 128.6, 128.3, 121.6, 75.6. **(Figure S109)** HRMS: (EI) calcd for $C_{14}H_9NO_3$ $[M+H]^+$: 240.0661. Found: 240.0654 Anal.calcd for: $C_{14}H_9NO_3$: C 70.29, H 3.79, N 5.86; Found: C 70.27, H 3.80, N 5.85.

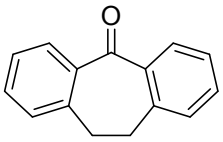
Benzo[5,6]oxocino[2,3-e]indole-8,13(3H,7H)-dione (2aa).



2aa

Prepared according General Procedure C. Light yellow solid (29.43mg, 53%). Mp. 163-166°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 11.02 (s, 1H), 7.92 (d, J = 7.7 Hz, 1H), 7.76 – 7.71 (m, 1H), 7.67 (dq, J = 7.5, 4.9, 4.3 Hz, 2H), 7.71 (d, J = 7.6 Hz, 1H), 7.35 (d, J = 7.4 Hz, 1H), 7.20 (d, J = 7.6 Hz, 1H), 6.62 (d, J = 7.6 Hz, 1H), 5.15 (d, J = 10.7 Hz, 1H), 4.97 (d, J = 10.7 Hz, 1H). **(Figure S110)** ^{13}C NMR (100 MHz, DMSO-d_6) δ=174.1, 171.9, 151.0, 137.1, 135.8, 134.9, 133.1, 132.5, 128.3, 128.0, 126.1, 123.2, 123.1, 121.5, 111.6, 100.3, 77.7. **(Figure S111)** HRMS: (EI) calcd for $C_{17}H_{11}NO_3$ $[M+H]^+$: 287.0818. Found: 287.0822 Anal.calcd for: $C_{17}H_{11}NO_3$: C 73.64, H 4.00, N 5.05; Found: C 73.66, H 4.01, N 5.04.

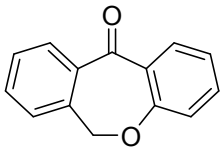
10,11-dihydro-5H-dibenzo[a,d][7]annulen-5-one (2ab).



2ab

Prepared according General Procedure C. Light yellow solid (33.77mg, 81%). Mp. 32-34 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 7.91 (dd, J = 7.8, 1.2 Hz, 2H), 7.51 (td, J = 7.4, 1.3 Hz, 2H), 7.40 – 7.31 (m, 4H), 3.14 (s, 4H). **(Figure S112)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 195.1, 142.4, 138.5, 133.0, 130.4, 130.0, 127.0, 34.6. **(Figure S113)** HRMS: (EI) calcd for $C_{15}H_{12}O$ $[M+H]^+$: 209.0967. Found: 209.0974 Anal.calcd for: $C_{15}H_{12}O$: C 86.51, H 5.81; Found: C 86.50, H 5.82.

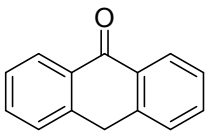
Dibenzo[b,e]oxepin-11(6H)-one (2ac).



2ac

Prepared according General Procedure C. Light yellow solid (32.34mg, 77%). Mp. 71-72°C. ^{1}H NMR (400 MHz, Chloroform-d) δ 8.25 (d, J = 9.4 Hz, 1H), 7.90 (d, J = 7.6 Hz, 1H), 7.56 – 7.43 (m, 3H), 7.34 (d, J = 7.4 Hz, 1H), 7.11 (t, J = 7.4 Hz, 1H), 7.05 (d, J = 8.3 Hz, 1H), 5.17 (s, 2H). **(Figure S114)** ^{13}C NMR (101 MHz, Chloroform-d) δ 161.3, 140.6, 135.7, 135.3, 132.7, 131.9 , 129.5, 129.2, 127.8, 122.1, 120.7, 73.6. **(Figure S115)** HRMS: (EI) calcd for $C_{14}H_{10}O_2$ $[M+H]^+$: 211.0760. Found: 211.0755 Anal.calcd for: $C_{14}H_{10}O_2$: C 79.98, H 4.79; Found: C 79.97, H 4.77.

Anthracen-9(10H)-one (2ad).

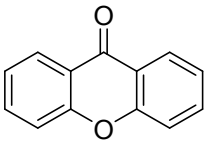


2ad

Prepared according General Procedure C. Light yellow solid (33.48mg, 86%). Mp. 152-157°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.20 (d, J = 7.5 Hz, 2H), 7.70 (t, J = 6.8 Hz, 2H), 7.60 (d, J = 7.4 Hz, 2H), 7.52 (t, J = 7.1 Hz, 2H), 4.46 (s, 2H). **(Figure S116)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 183.8, 141.5, 133.4, 131.7, 129.5, 127.4, 127.1, 32.1. **(Figure S117)** HRMS: (EI) calcd for $C_{14}H_{10}O$ $[M+H]^+$:

195.0811. Found: 195.0804 Anal.calcd for: $C_{14}H_{10}O$: C 86.57, H 5.19; Found: C 86.58, H 5.21.

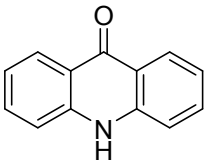
9H-xanthen-9-one (2ae).



2ae

Prepared according General Procedure C. Light yellow solid (29.49mg, 75%). Mp. 175-176 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.58 – 8.08 (m, 2H), 8.06 – 7.23 (m, 6H). **(Figure S118)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 176.4, 156.0, 136.0, 126.4, 124.8, 121.6, 118.7. **(Figure S119)** HRMS: (EI) calcd for $C_{13}H_8O_2$ $[M+H]^+$: 197.0603. Found: 197.0598 Anal.calcd for: $C_{13}H_8O_2$: C 79.58, H 4.11; Found: C 79.61, H 4.12.

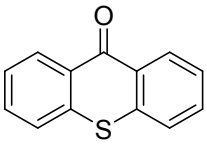
Acridin-9(10H)-one (2af).



2af

Prepared according General Procedure C. Yellow solid (28.81mg, 74%). Mp. 354-355°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 11.74 (s, 1H), 8.27 (d, J = 7.2 Hz, 2H), 7.75 (ddd, J = 8.4, 7.0, 1.5 Hz, 2H), 7.57 (d, J = 8.3 Hz, 2H), 7.31 – 7.24 (m, 2H). **(Figure S120)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 177.2, 141.4, 133.9, 126.5, 121.4, 121.0, 117.8. **(Figure S121)** HRMS: (EI) calcd for $C_{13}H_9NO$ $[M+H]^+$: 196.0763. Found: 196.0769 Anal.calcd for: $C_{13}H_9NO$: C 79.98, H 4.65, N 7.17; Found: C 80.01, H 4.67, N 7.16.

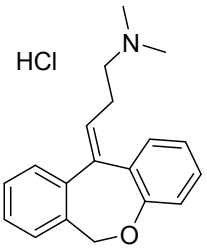
9H-thioxanthen-9-one (2ag).



2ag

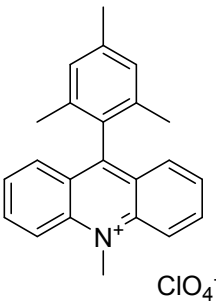
Prepared according General Procedure C. White solid (26.11mg, 62%). Mp. 215-216°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.54 – 8.41 (m, 2H), 7.82 (d, J = 22.4 Hz, 4H), 7.60 (s, 2H). **(Figure S122)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 179.3, 137.0, 133.5, 129.5, 128.9, 127.3, 127.0. **(Figure S123)** HRMS: (EI) calcd for $C_{13}H_8OS$ $[M+H]^+$: 213.0375. Found: 213.0370 Anal.calcd for: $C_{13}H_8OS$: C 73.56, H 3.80; Found: C73.55, H 3.81.

Doxepin Hydrochloride.



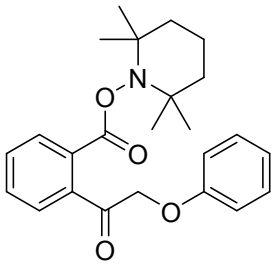
Yellow solid. Mp. 182-184°C. ^{1}H NMR (400 MHz, Chloroform-d) δ 7.37 – 7.28 (m, 3H), 7.21 (d, J = 7.9 Hz, 1H), 7.17 (d, J = 7.5 Hz, 1H), 7.13 – 7.08 (m, 1H), 6.85 (t, J = 7.6 Hz, 1H), 6.72 (d, J = 8.1 Hz, 1H), 5.89 (t, J = 7.3 Hz, 1H), 5.13 (d, J = 281.9 Hz, 2H), 3.21 – 2.98 (m, 2H), 2.69 (d, J = 17.7 Hz, 8H). **(Figure S124)** ^{13}C NMR (101 MHz, Chloroform-d) δ 155.15, 143.42, 139.89, 134.16, 129.95, 129.65, 128.89, 128.56, 128.50, 127.30, 126.26, 123.97, 121.20, 119.35, 69.96, 56.86, 24.37. **(Figure S125)**

9-Mesityl-10-methylacridinium Perchlorate.



Yellow solid. Mp. 384-385°C. ^{1}H NMR (400 MHz, Chloroform-d) δ 8.82 (d, J = 9.3 Hz, 2H), 8.42 (ddd, J = 9.1, 6.6, 1.7 Hz, 2H), 7.88 – 7.76 (m, 4H), 7.15 (s, 2H), 5.10 (s, 3H), 2.48 (s, 3H), 1.73 (s, 6H). **(Figure S126)** ^{13}C NMR (100 MHz, Chloroform-d) δ= 162.7, 141.6, 140.3, 139.4, 135.9, 129.4, 129.0, 128.9, 128.4, 126.0, 119.4, 100.0, 39.2, 21.3, 20.1. **(Figure S127)**

2,2,6,6-tetramethylpiperidin-1-yl 2-(2-phenoxyacetyl)benzoate (V).



Prepared according General Procedure for Radical Trapping Experiment with TEMPO. White solid. Mp. 78-79°C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 7.94 (d, J = 7.6 Hz, 1H), 7.88 (d, J = 4.0 Hz, 2H), 7.75 (dt, J = 8.1, 4.2 Hz, 1H), 7.31 (t, J = 7.9 Hz, 2H), 7.00 (t, J = 7.3 Hz, 1H) , 6.91 (d, J = 8.0 Hz, 2H), 5.18 (s, 2H), 1.58 (q, J = 16.3 Hz, 5H), 1.40 (s, 1H), 1.21 (s, 6H), 1.03 (s, 6H). **(Figure S128)** ^{13}C NMR (100 MHz, DMSO-d_6) δ= 195.8, 164.3, 158.0, 134.4, 133.0, 131.5, 129.8, 129.3, 128.7, 128.3, 121.4, 115.0, 72.3, 60.5, 39.5, 31.9, 31.2, 20.9, 16.9. **(Figure S129)** HRMS: (EI) calcd for $C_{24}H_{29}NO_4$ $[M+H]^+$: 396.2176. Found: 396.2182. Anal.calcd for: $C_{24}H_{29}NO_4$: C 72.89, H 7.39, N 3.54; Found: C 72.88, H 7.38, N 3.57. FT-IR (KBr disc): v=3326, 1743, 1499, 1221, 1216cm^{-1}. UV-*vis* spectra absorption peak: 273.3nm.

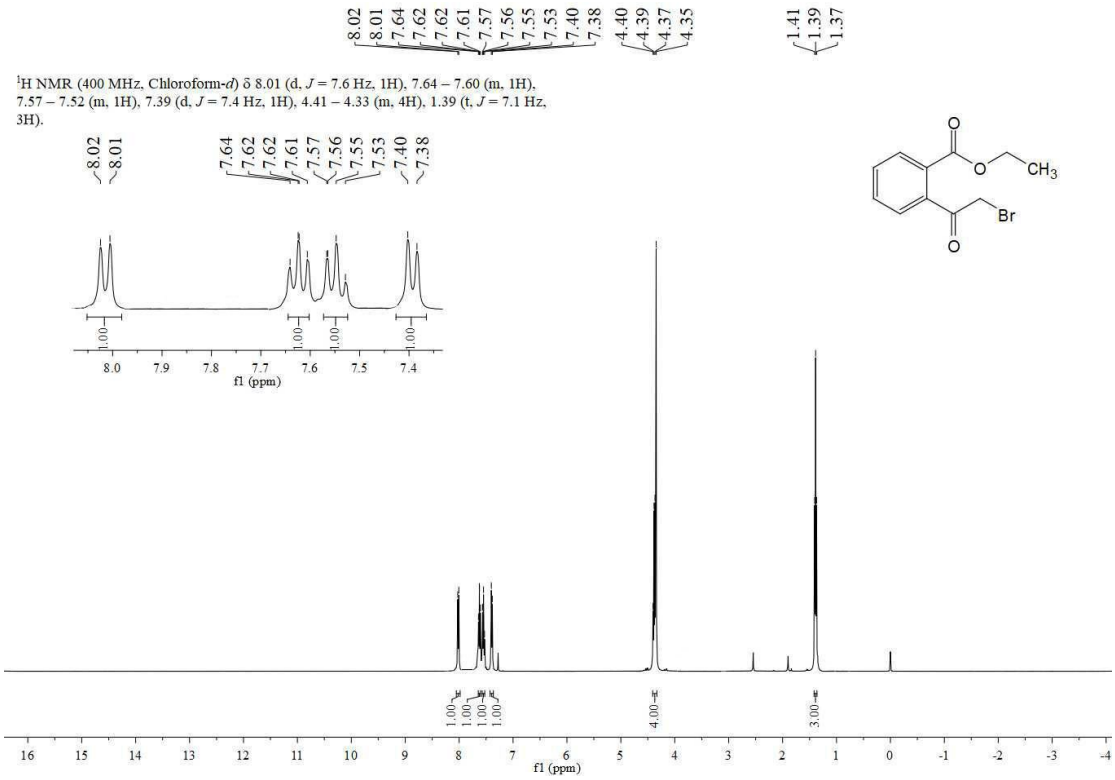


Figure S1. ^{1}H NMR of ethyl 2-(2-bromoacetyl)benzoate **(Intermediate a)**.

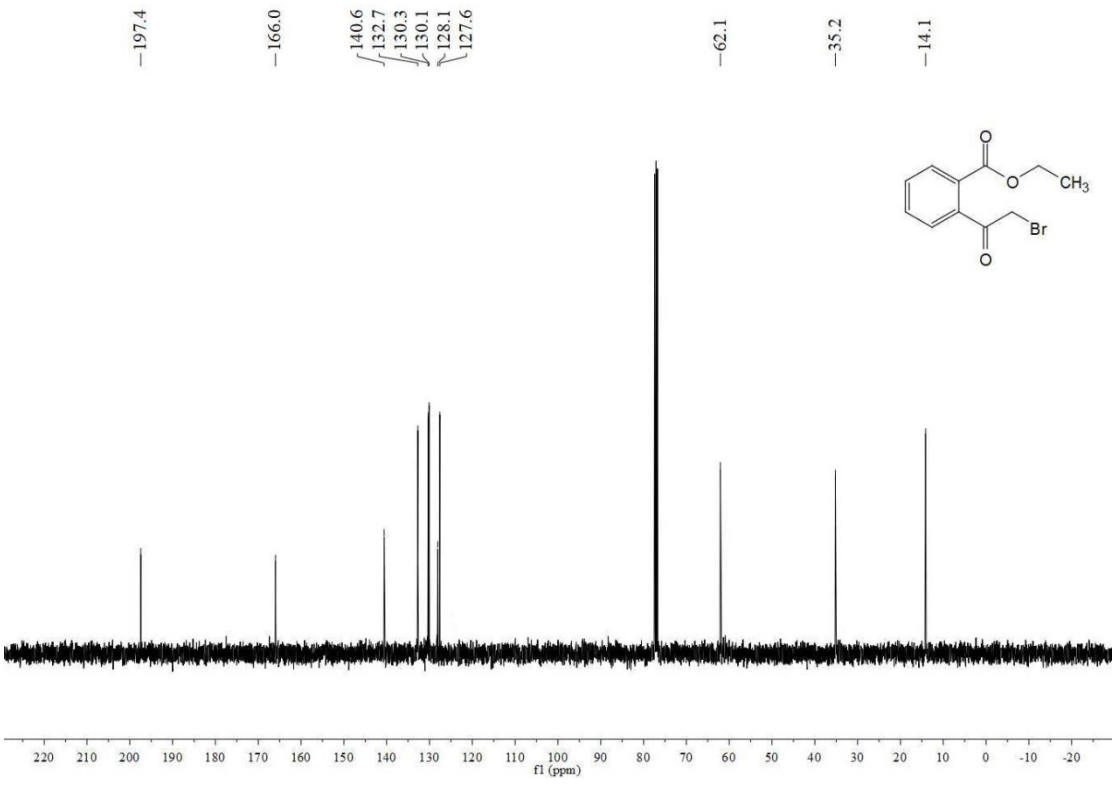


Figure S2. ^{13}C NMR of ethyl 2-(2-bromoacetyl)benzoate **(Intermediate a)**.

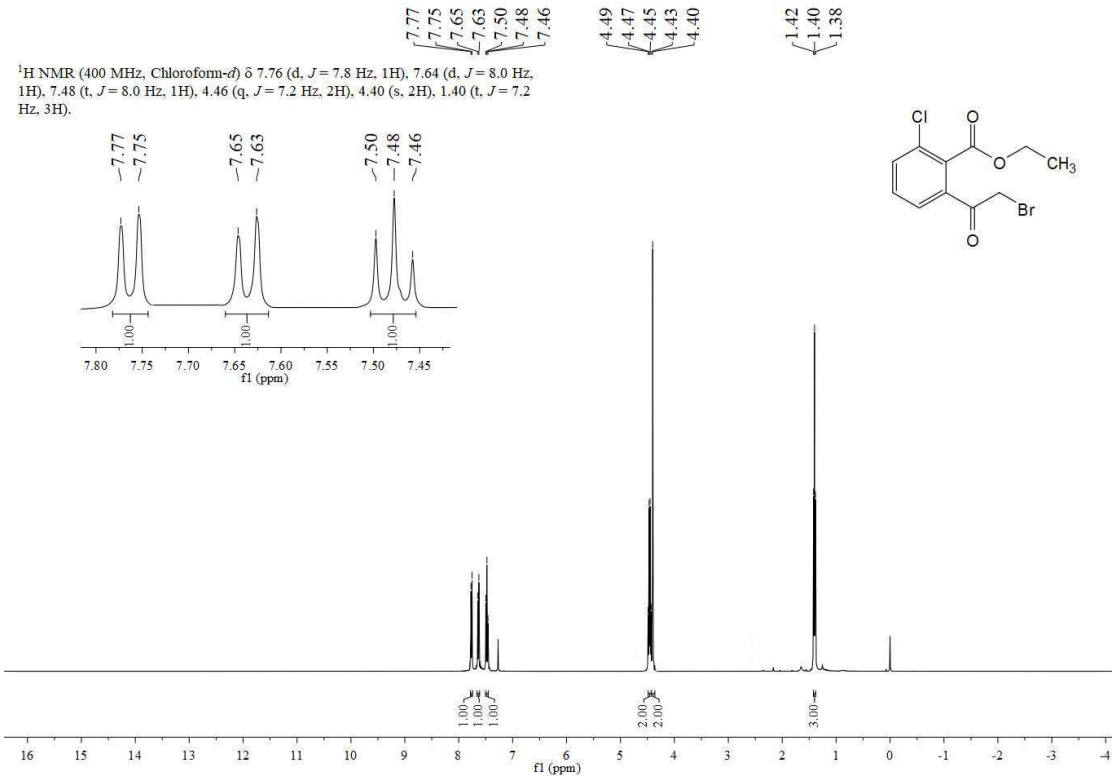


Figure S3. [1]H NMR of ethyl 2-(2-bromoacetyl)-6-chlorobenzoate **(Intermediate b)**.

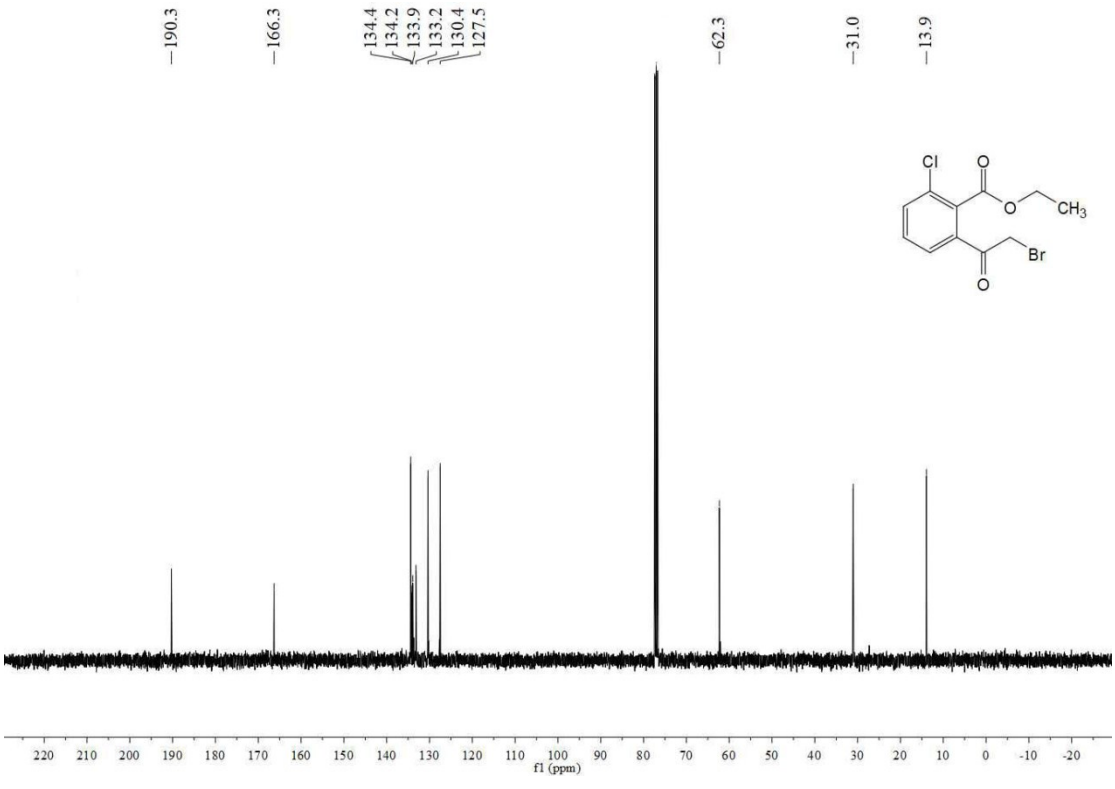


Figure S4. [13]C NMR of ethyl 2-(2-bromoacetyl)-6-chlorobenzoate **(Intermediate b)**.

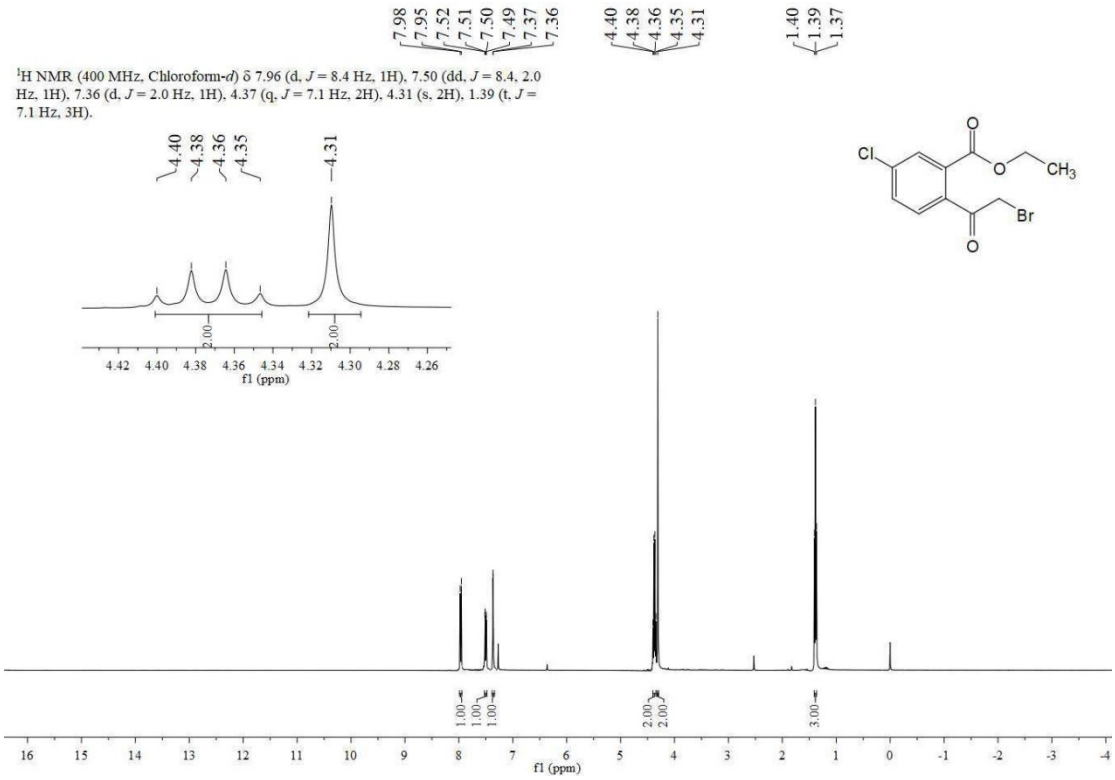


Figure S5. [1]H NMR of ethyl 2-(2-bromoacetyl)-5-chlorobenzoate **(Intermediate c).**

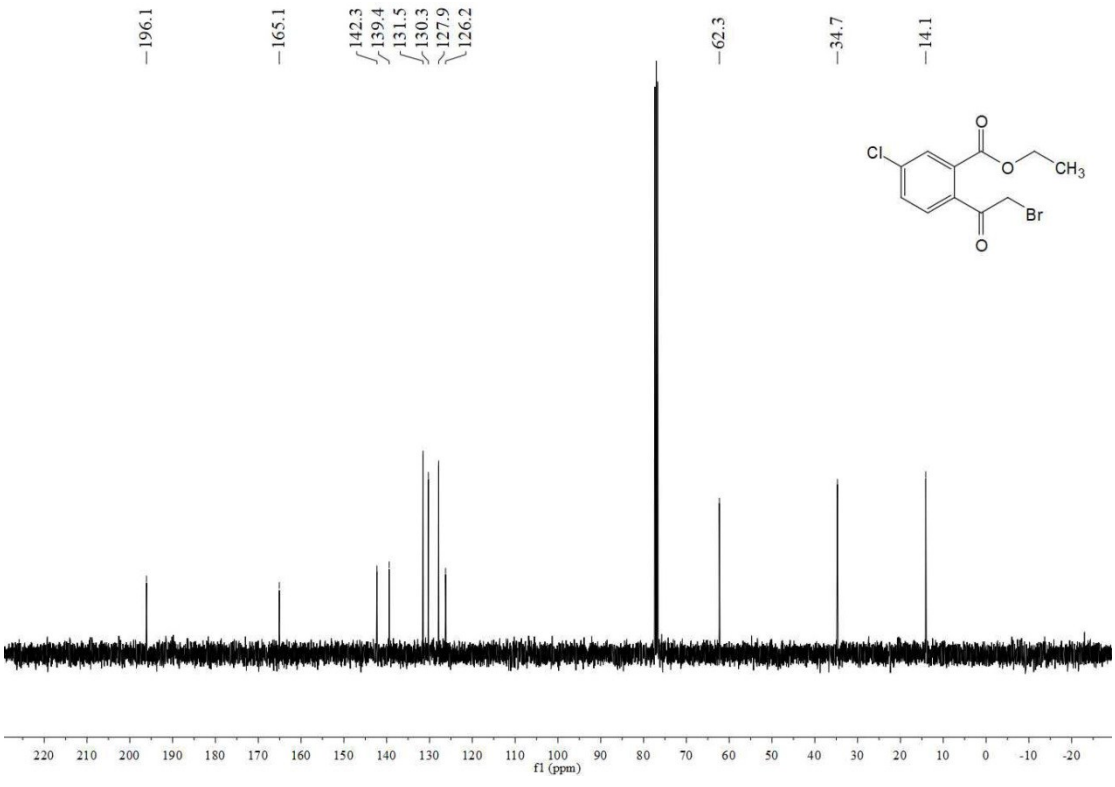


Figure S6. [13]C NMR of ethyl 2-(2-bromoacetyl)-5-chlorobenzoate **(Intermediate c).**

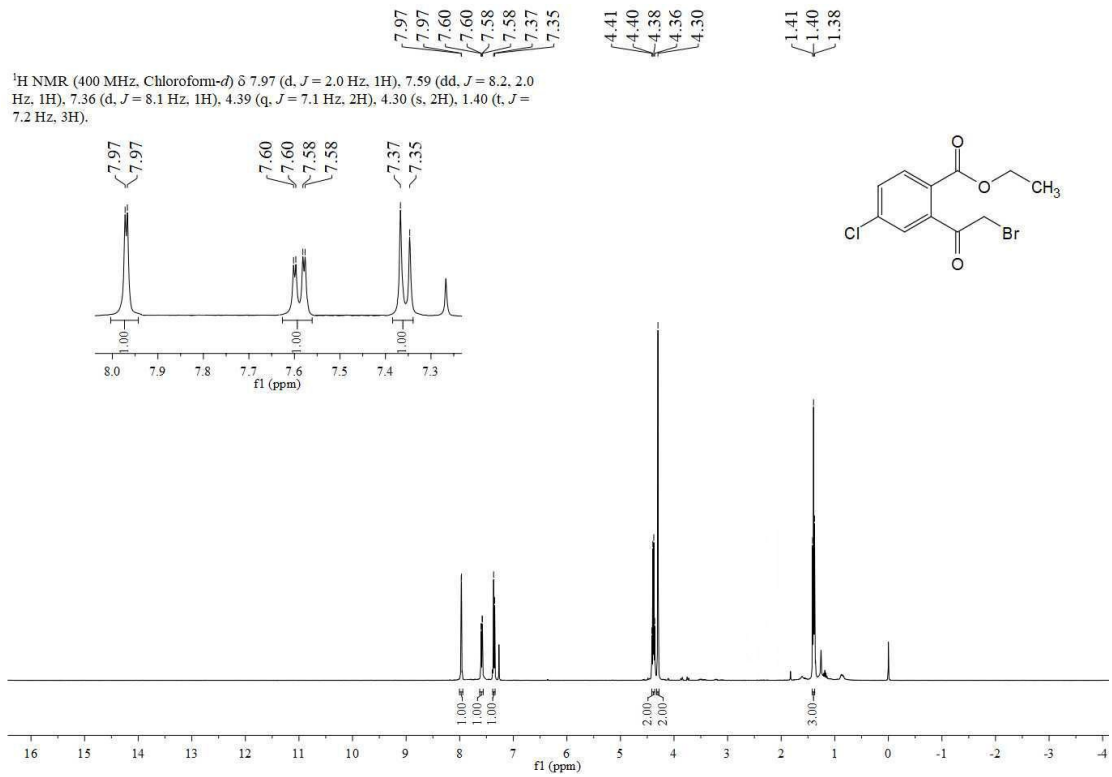


Figure S7. ^{1}H NMR of ethyl 2-(2-bromoacetyl)-4-chlorobenzoate **(Intermediate d).**

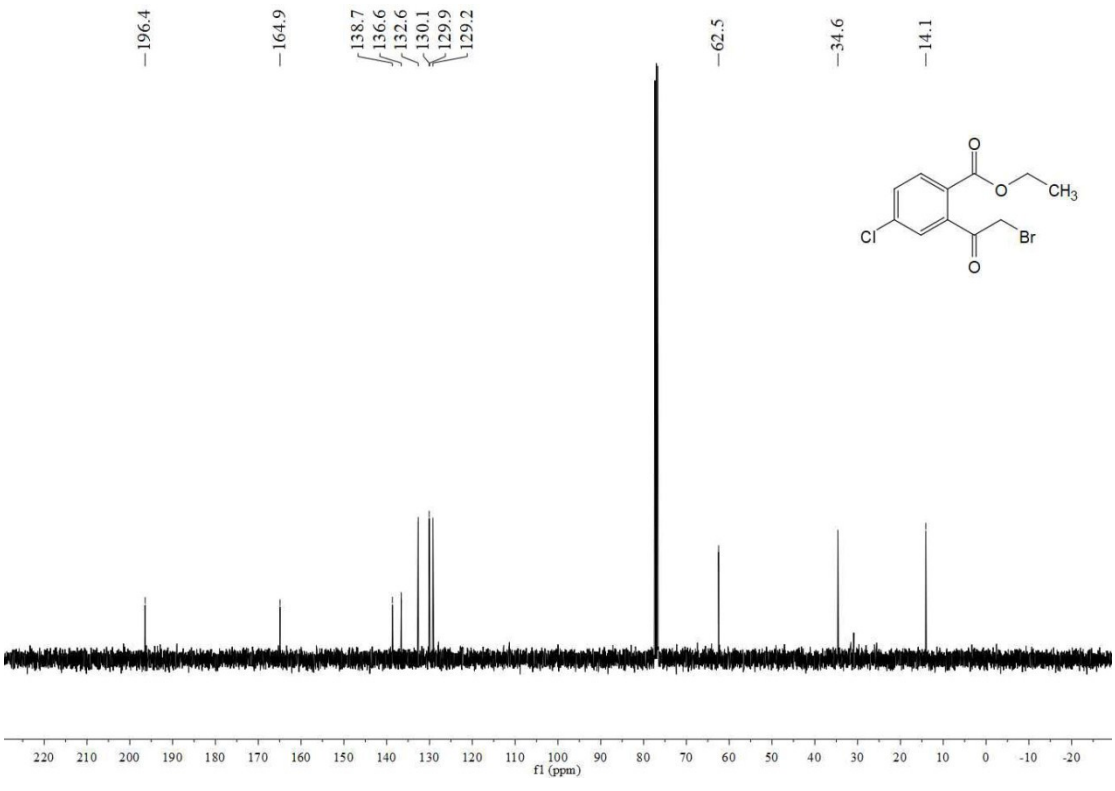


Figure S8. ^{13}C NMR of ethyl 2-(2-bromoacetyl)-4-chlorobenzoate **(Intermediate d).**

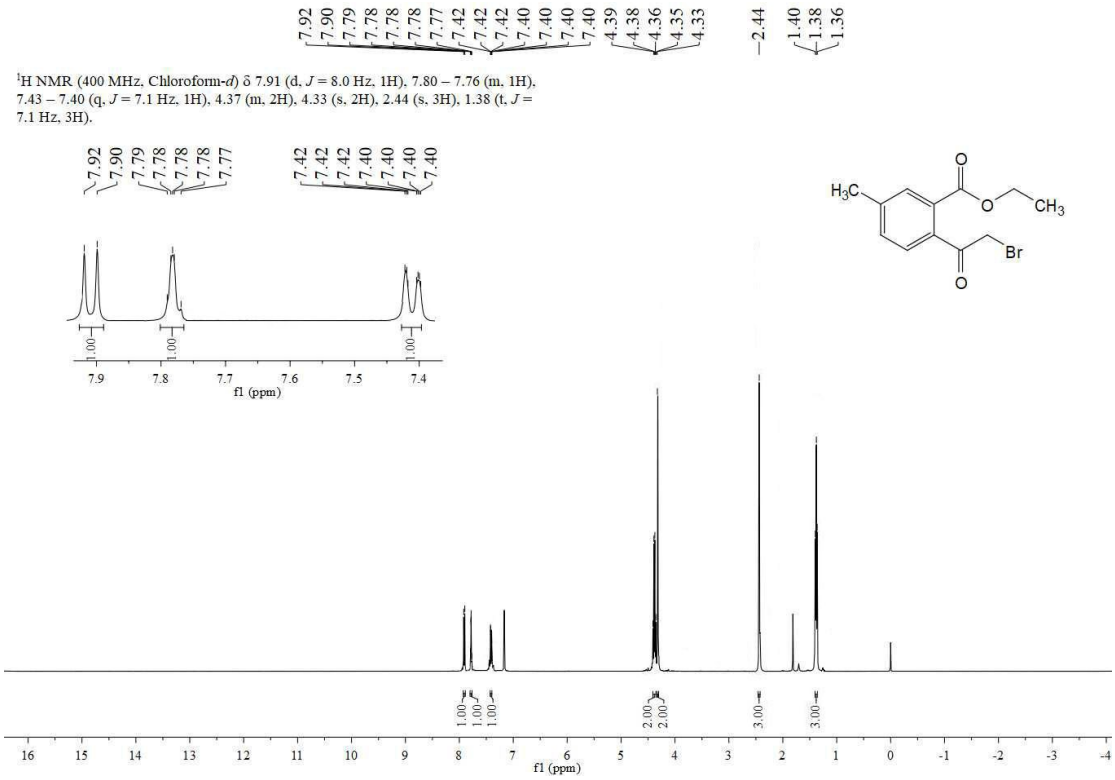


Figure S9. [1]H NMR of ethyl 2-(2-bromoacetyl)-5-methylbenzoate **(Intermediate e).**

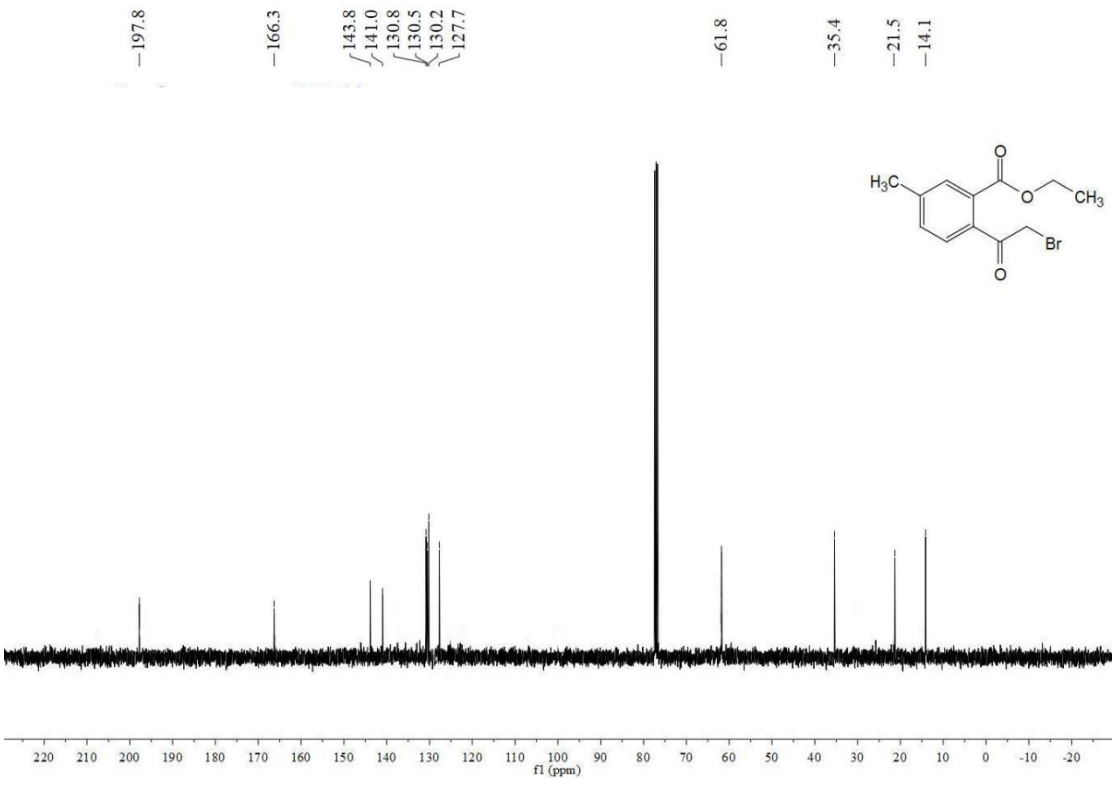


Figure S10. [13]C NMR of ethyl 2-(2-bromoacetyl)-5-methylbenzoate **(Intermediate e).**

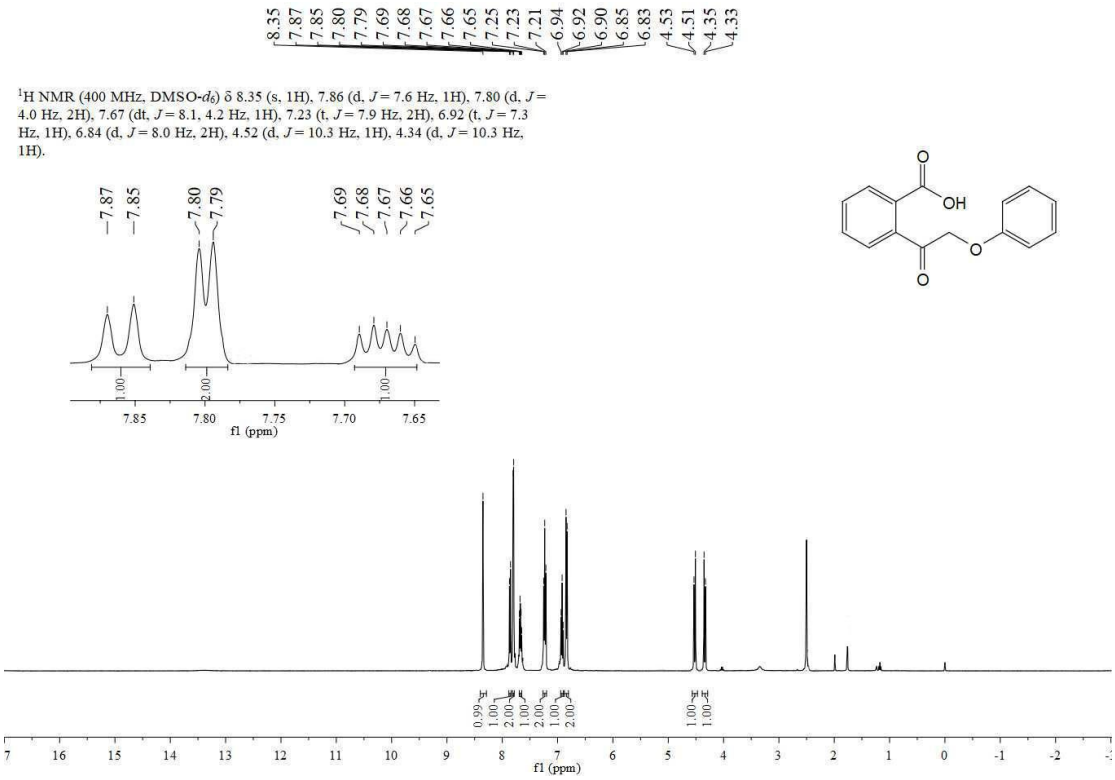


Figure S11. [1]H NMR of 2-(2-phenoxyacetyl)benzoic acid **(1a).**

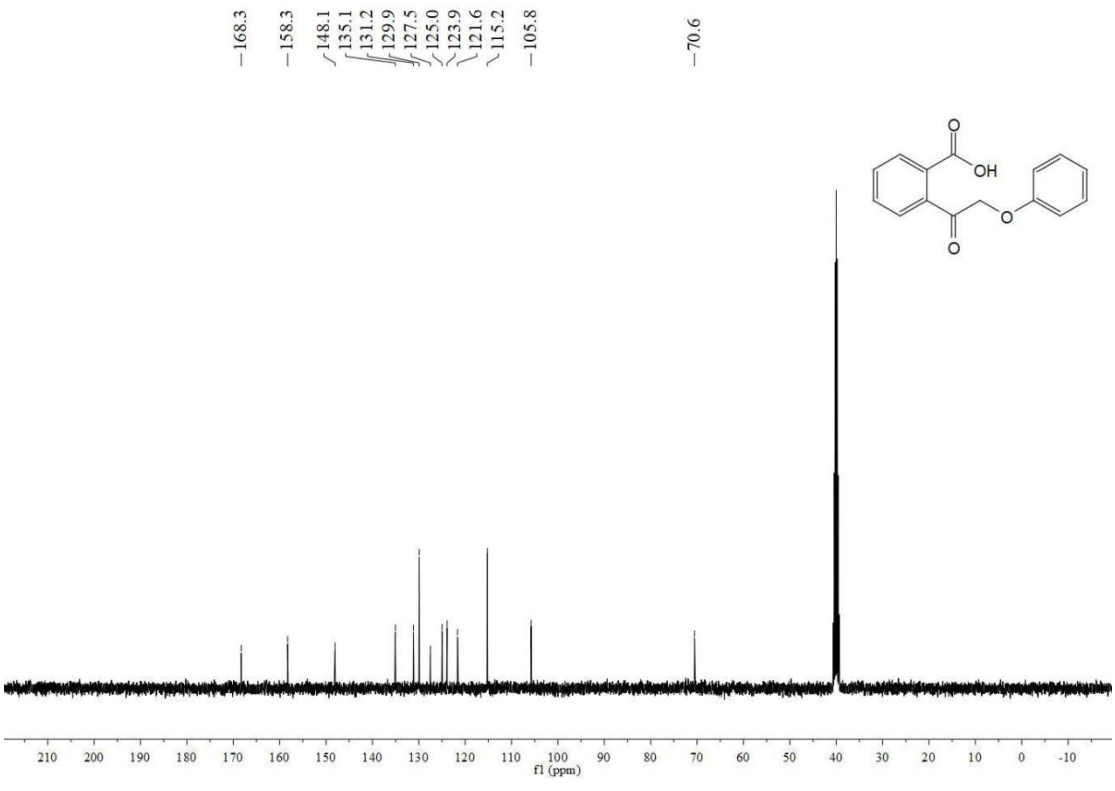


Figure S12. [13]C NMR of 2-(2-phenoxyacetyl)benzoic acid **(1a).**

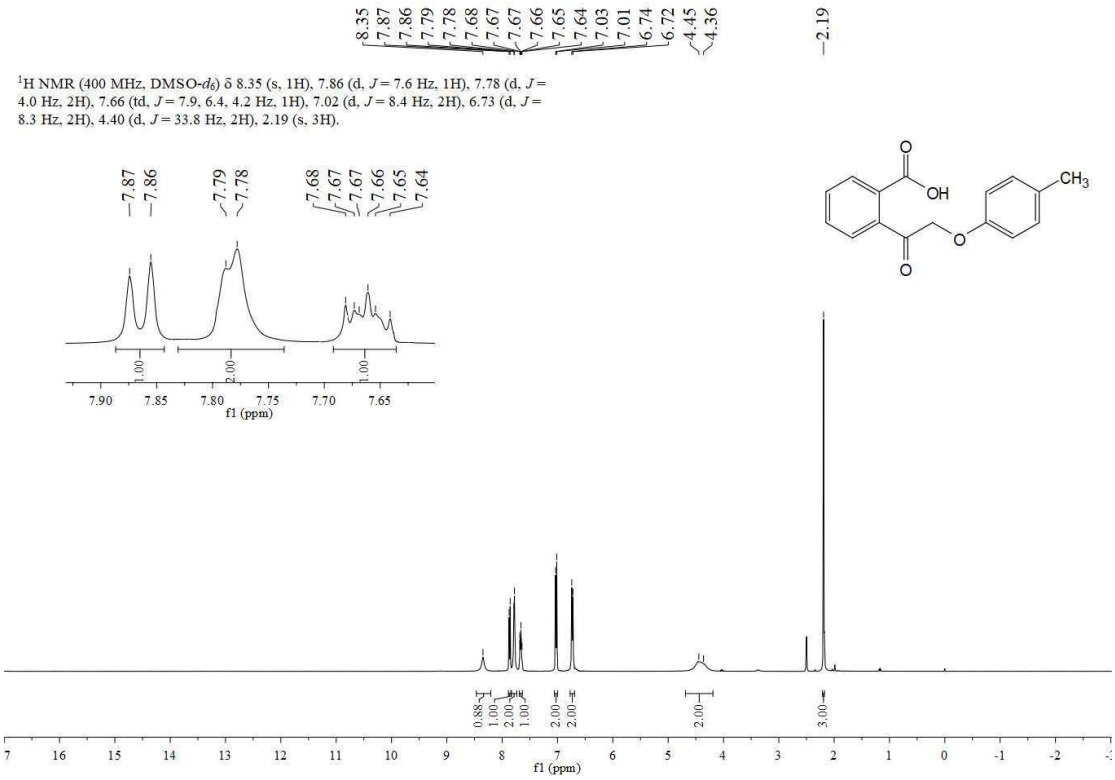


Figure S13. [1]H NMR of 2-(2-(p-tolyloxy)acetyl)benzoic acid **(1b).**

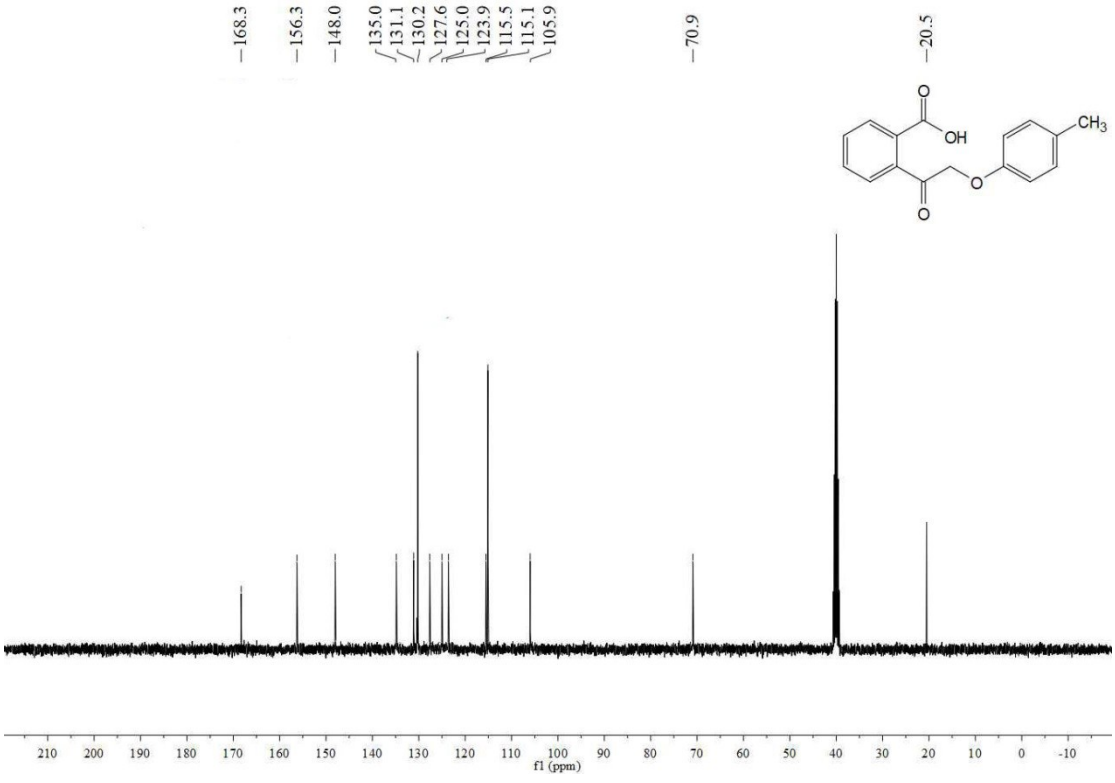


Figure S14. [13]C NMR of 2-(2-(p-tolyloxy)acetyl)benzoic acid **(1b).**

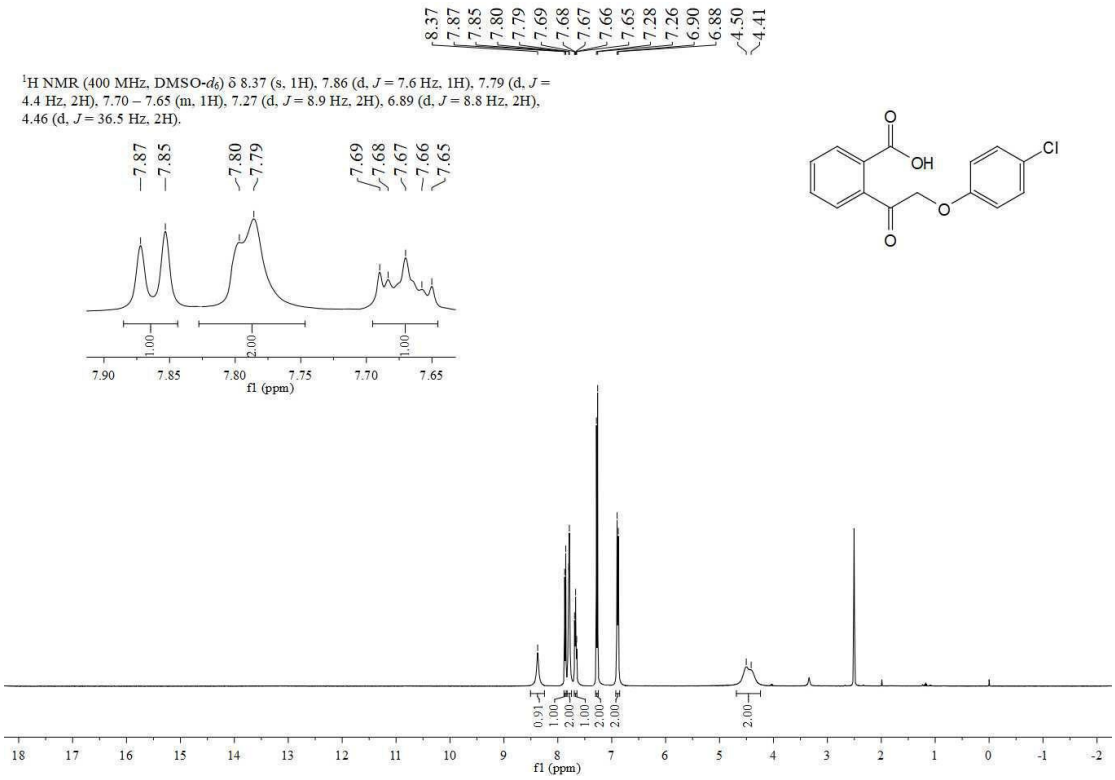


Figure S15. ^{1}H NMR of 2-(2-(4-chlorophenoxy)acetyl)benzoic acid **(1c).**

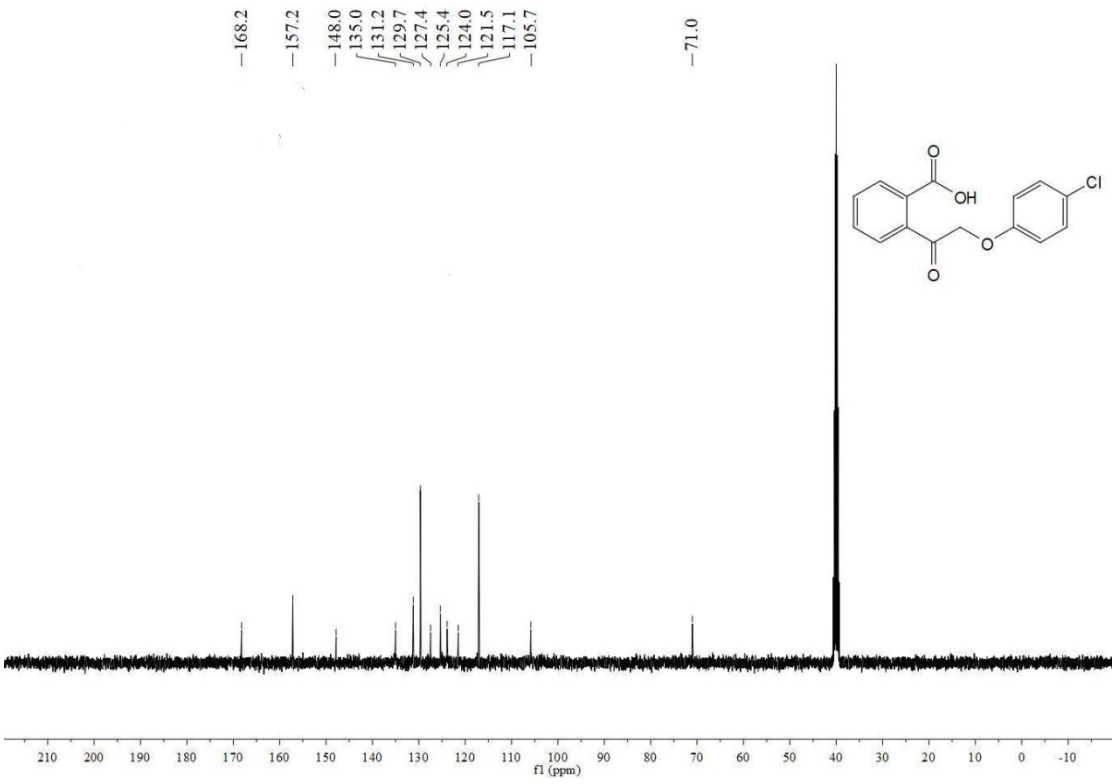


Figure S16. ^{13}C NMR of 2-(2-(4-chlorophenoxy)acetyl)benzoic acid **(1c).**

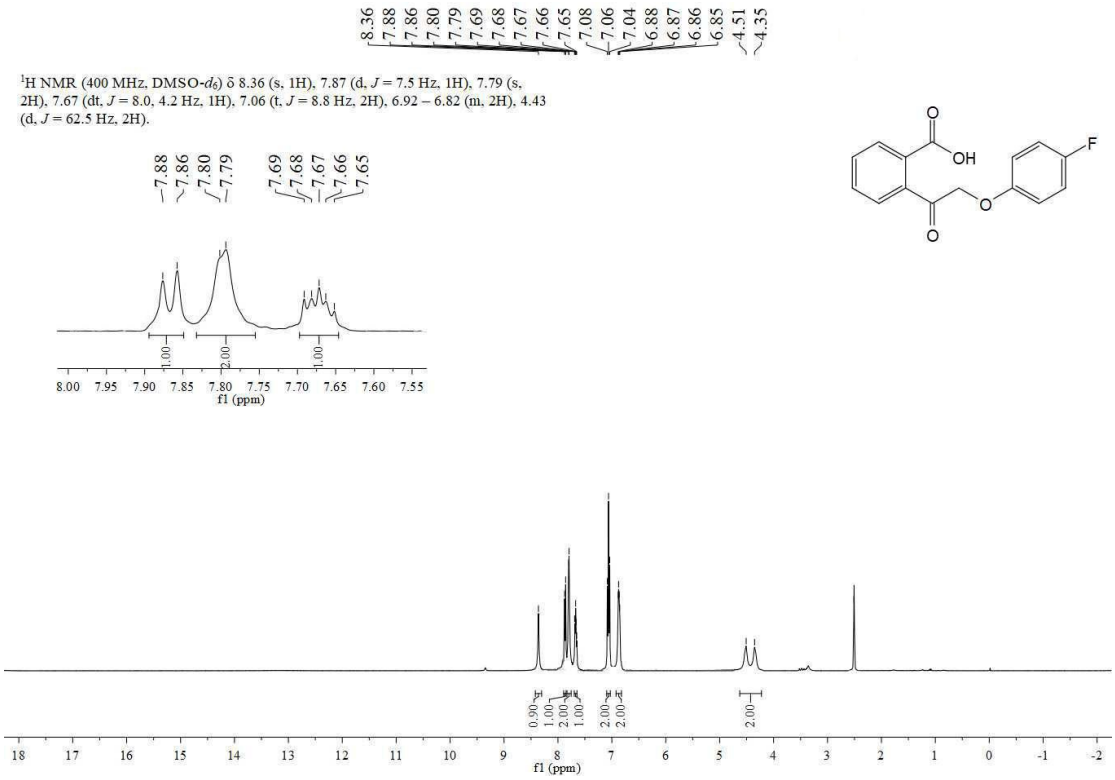


Figure S17. [1]H NMR of 2-(2-(4-fluorophenoxy)acetyl)benzoic acid **(1d).**

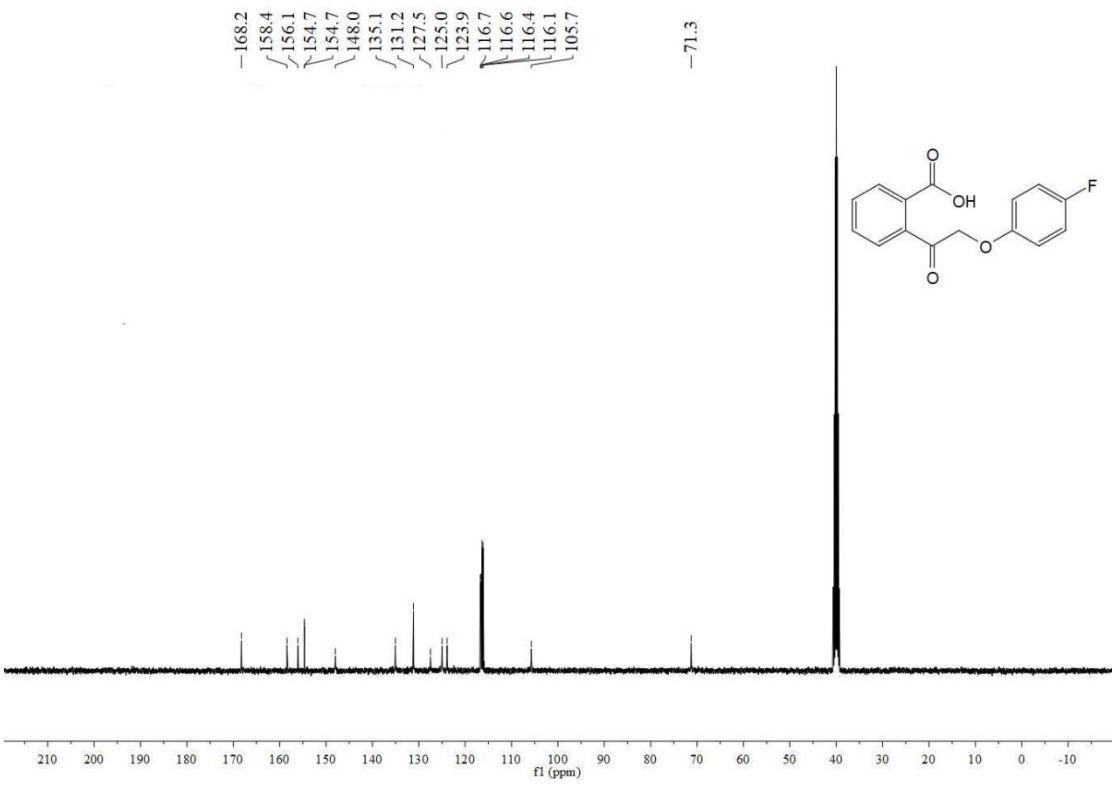
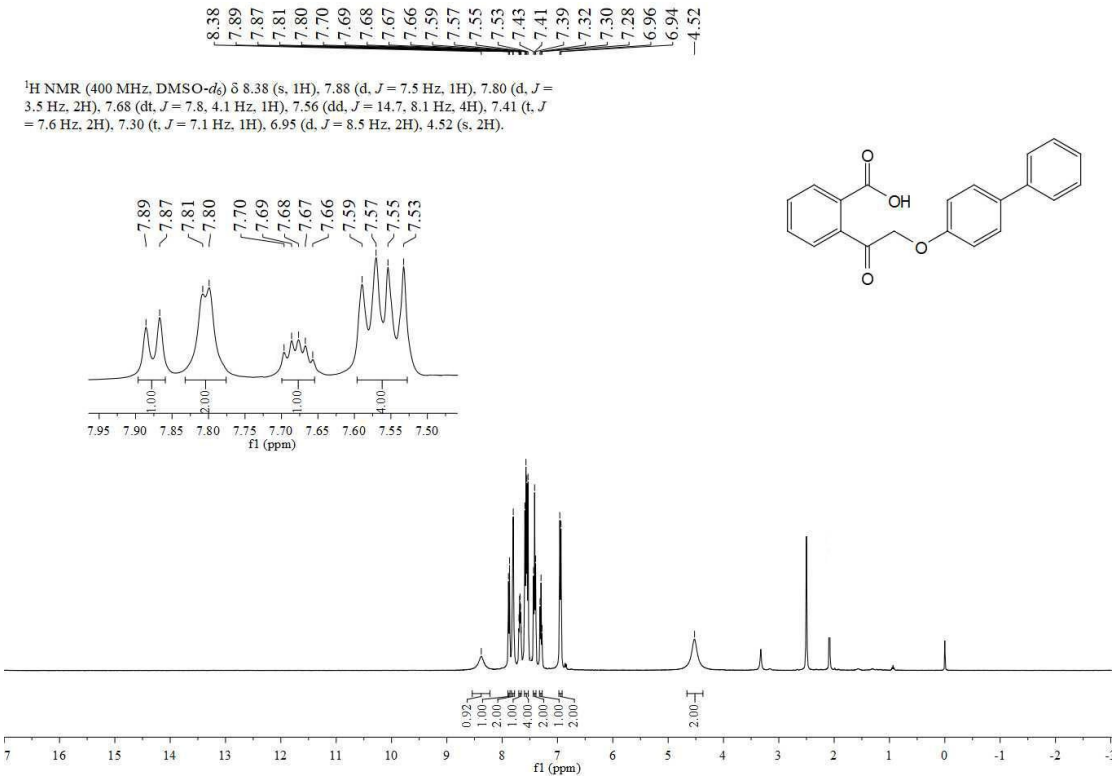


Figure S18. [13]C NMR of 2-(2-(4-fluorophenoxy)acetyl)benzoic acid **(1d).**



^{1}H NMR (400 MHz, DMSO-d_6) δ 8.38 (s, 1H), 7.88 (d, J = 7.5 Hz, 1H), 7.80 (d, J = 3.5 Hz, 2H), 7.68 (dt, J = 7.8, 4.1 Hz, 1H), 7.56 (dd, J = 14.7, 8.1 Hz, 4H), 7.41 (t, J = 7.6 Hz, 2H), 7.30 (t, J = 7.1 Hz, 1H), 6.95 (d, J = 8.5 Hz, 2H), 4.52 (s, 2H).

Figure S19. ^{1}H NMR of 2-(2-([1,1'-biphenyl]-4-yloxy)acetyl)benzoic acid **(1e).**

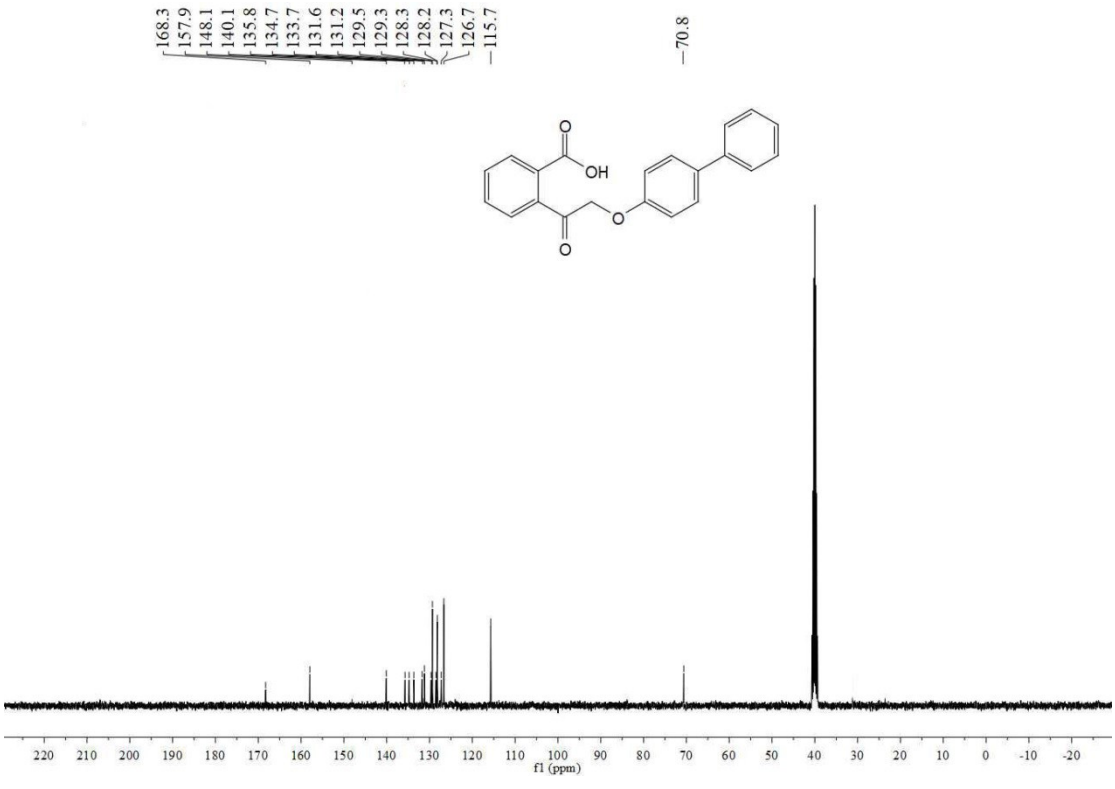


Figure S20. ^{13}C NMR of 2-(2-([1,1'-biphenyl]-4-yloxy)acetyl)benzoic acid **(1e).**

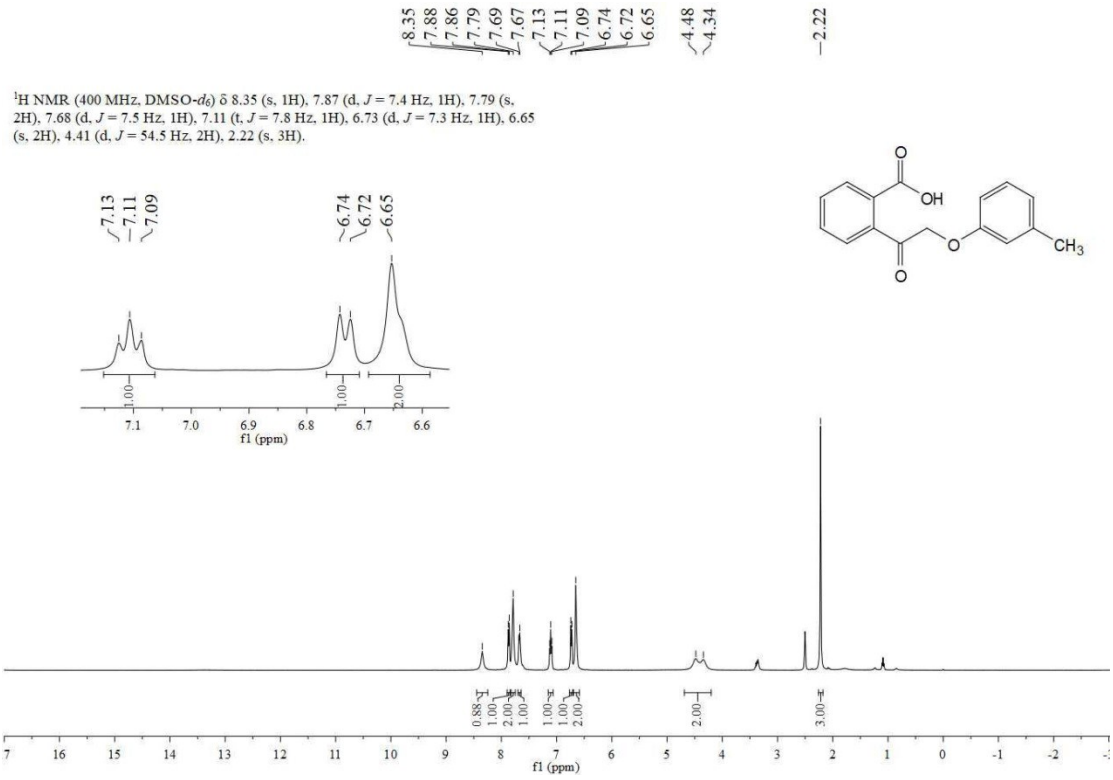


Figure S21. [1]H NMR of 2-(2-(m-tolyloxy)acetyl)benzoic acid **(1k).**

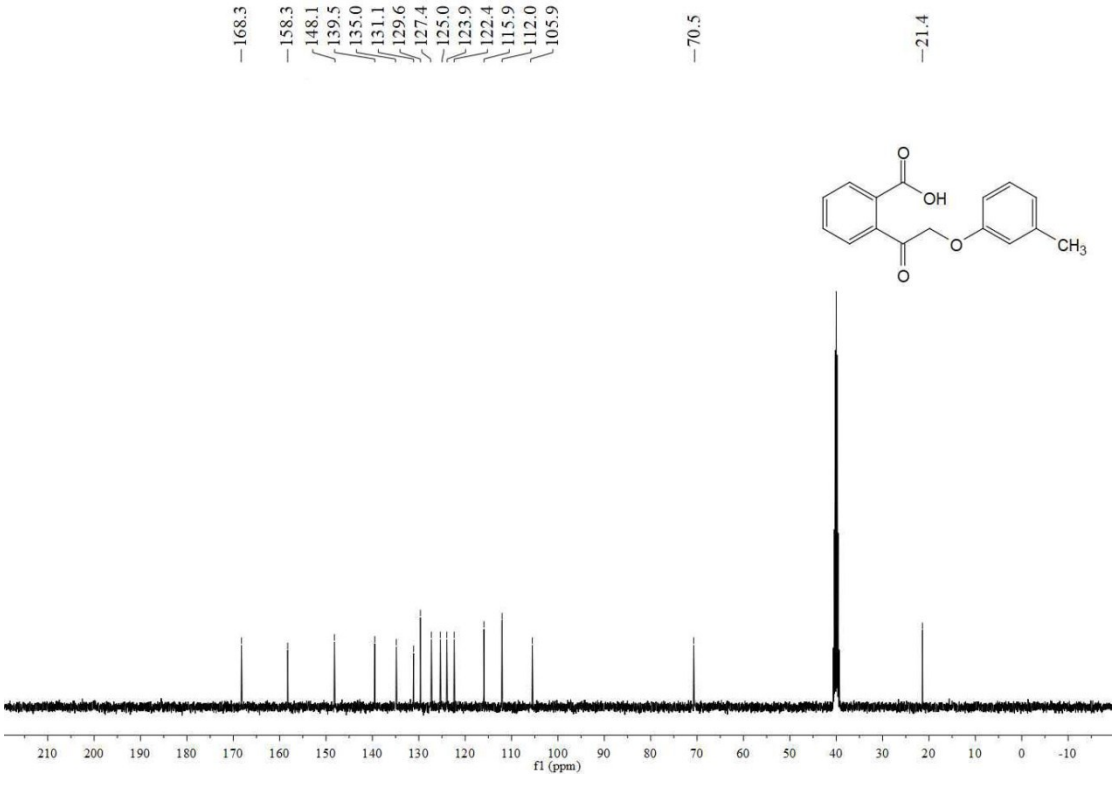


Figure S22. [13]C NMR of 2-(2-(m-tolyloxy)acetyl)benzoic acid **(1k).**

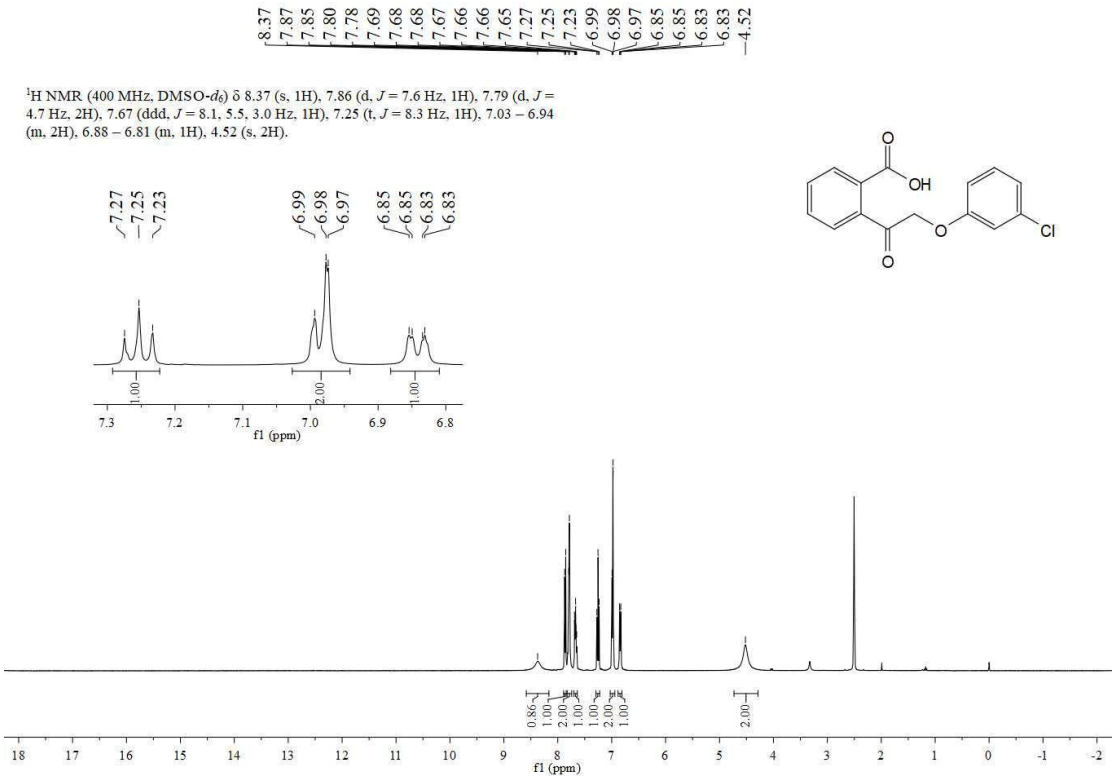


Figure S23. [1]H NMR of 2-(2-(3-chlorophenoxy)acetyl)benzoic acid **(1l).**

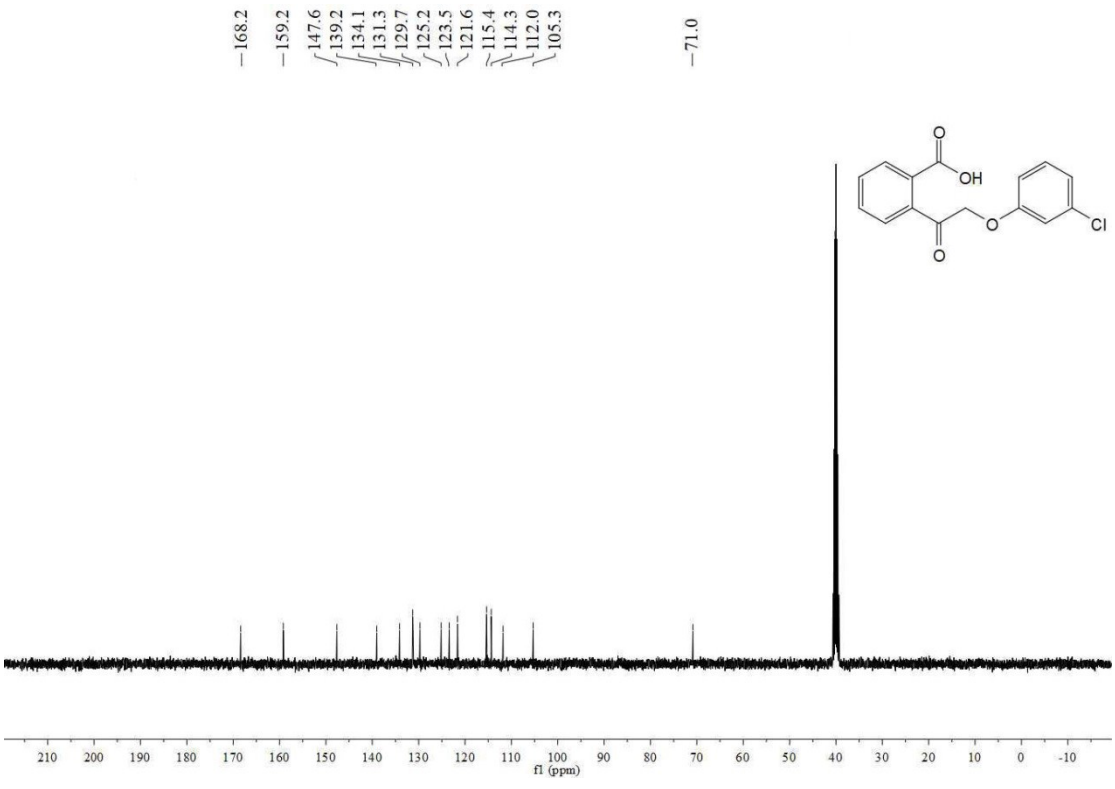


Figure S24. [13]C NMR of 2-(2-(3-chlorophenoxy)acetyl)benzoic acid **(1l).**

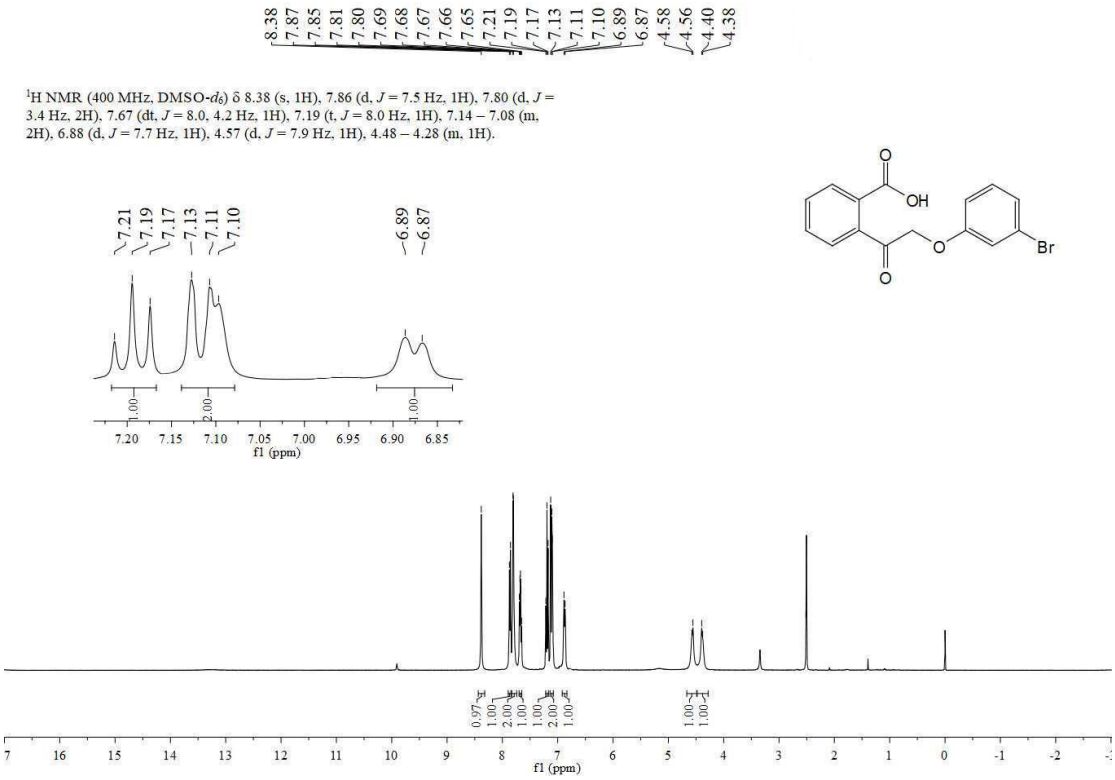


Figure S25. ^{1}H NMR of 2-(2-(3-bromophenoxy)acetyl)benzoic acid **(1m).**

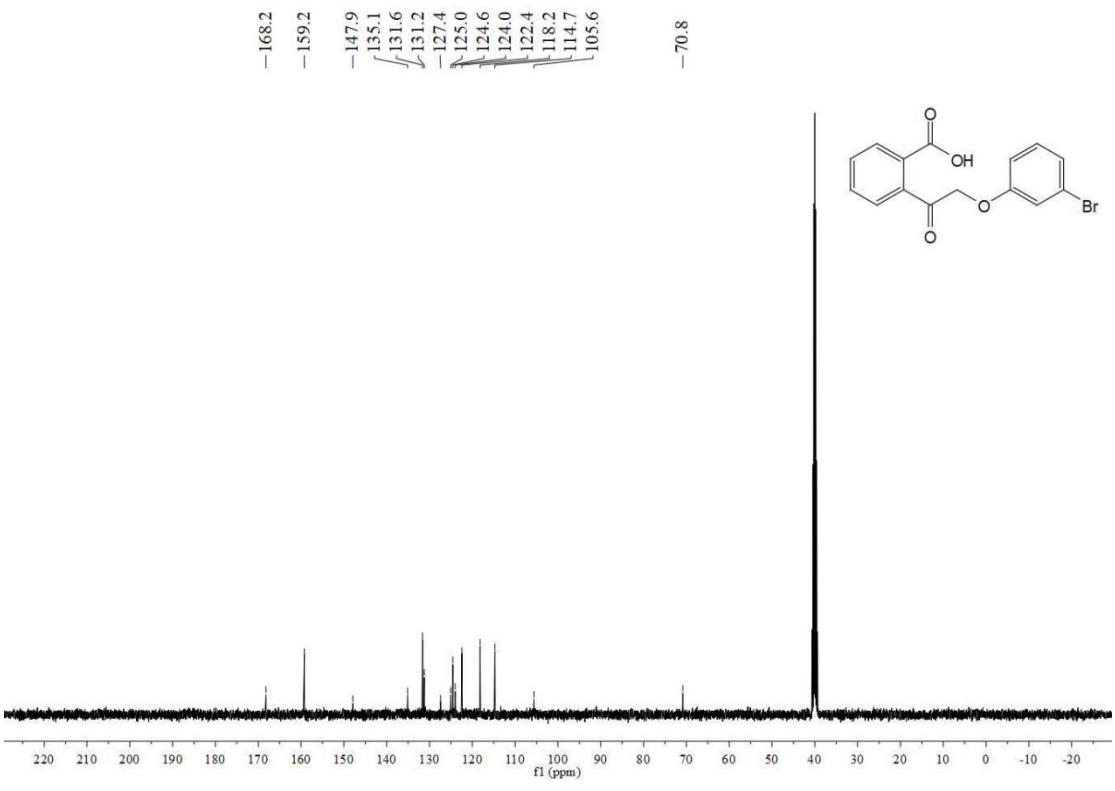


Figure S26. ^{13}C NMR of 2-(2-(3-bromophenoxy)acetyl)benzoic acid **(1m).**

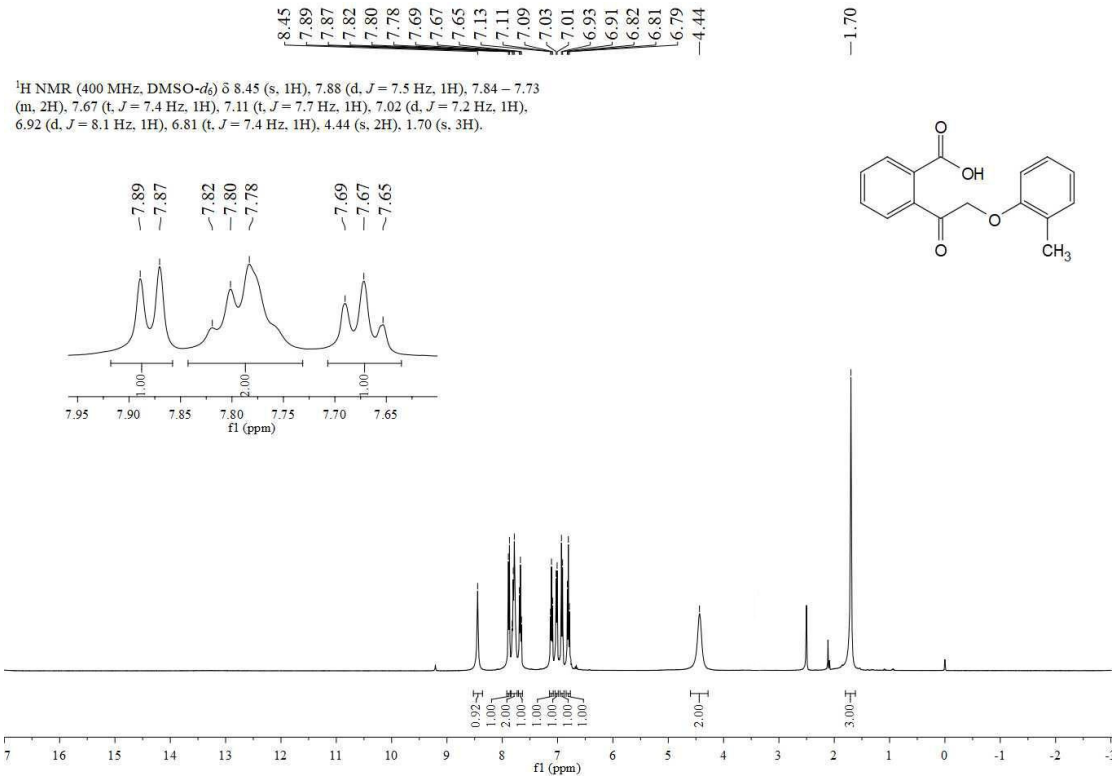


Figure S27. [1]H NMR of 2-(2-(o-tolyloxy)acetyl)benzoic acid **(1n).**

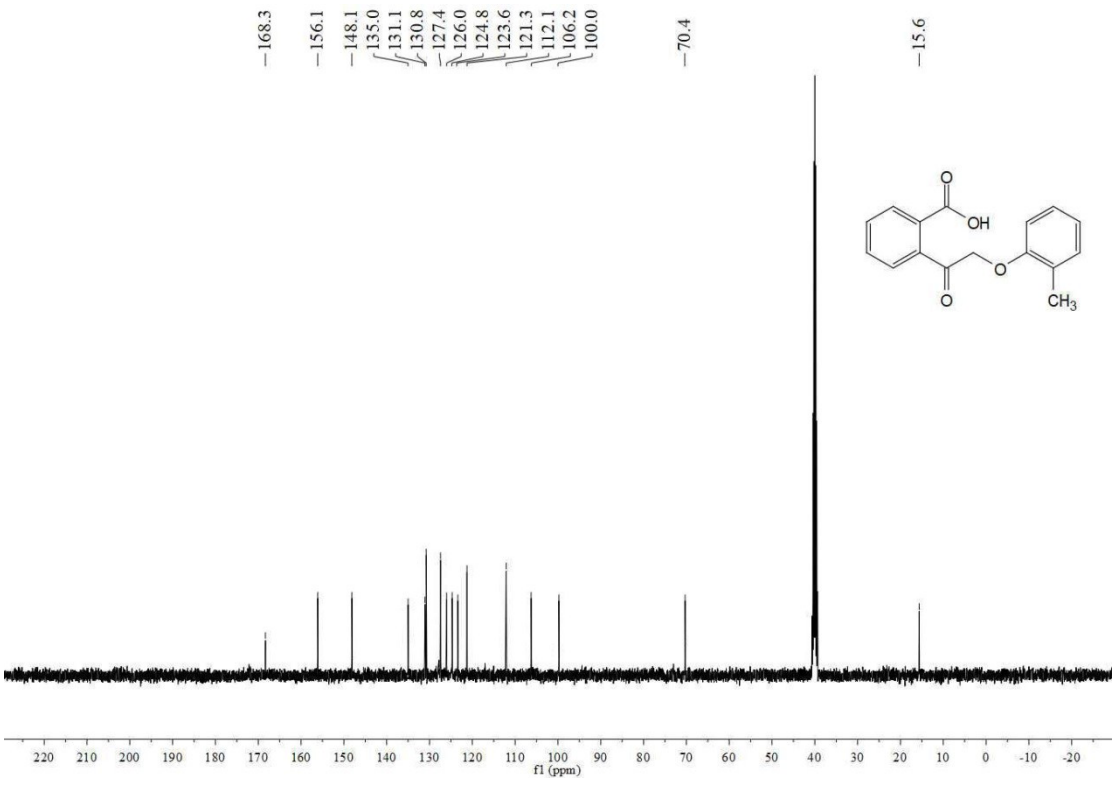


Figure S28. [13]C NMR of 2-(2-(o-tolyloxy)acetyl)benzoic acid **(1n).**

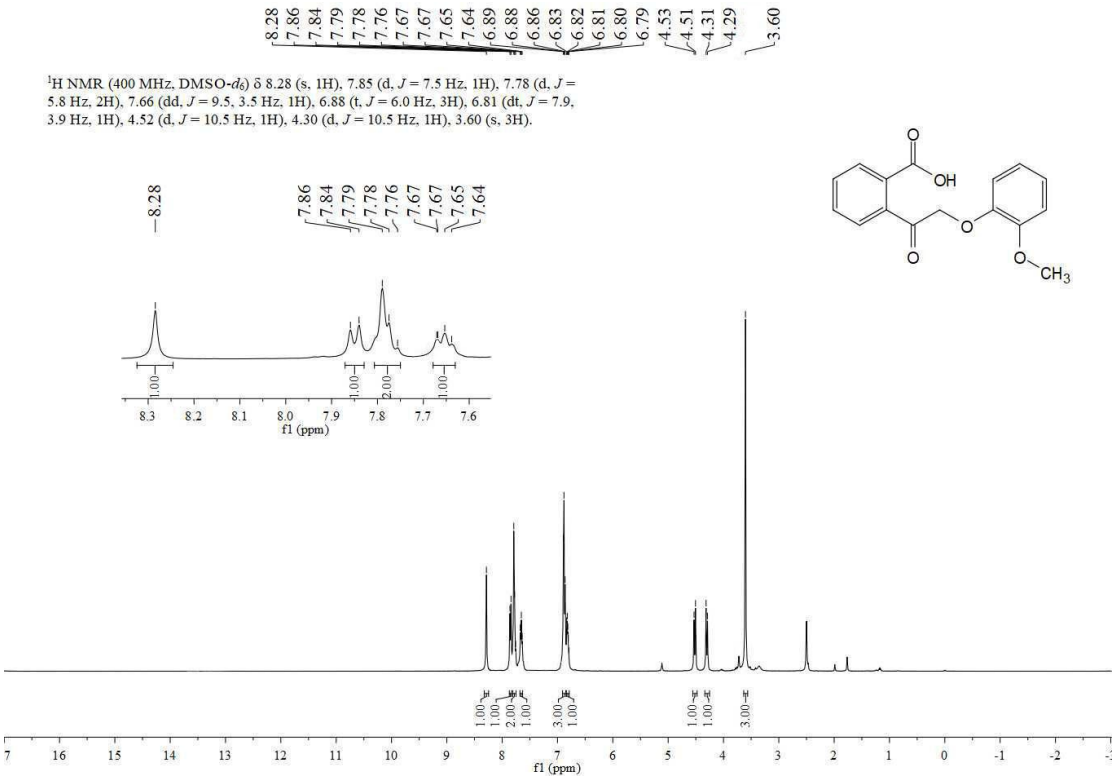


Figure S29. [1]H NMR of 2-(2-(2-methoxyphenoxy)acetyl)benzoic acid **(1o).**

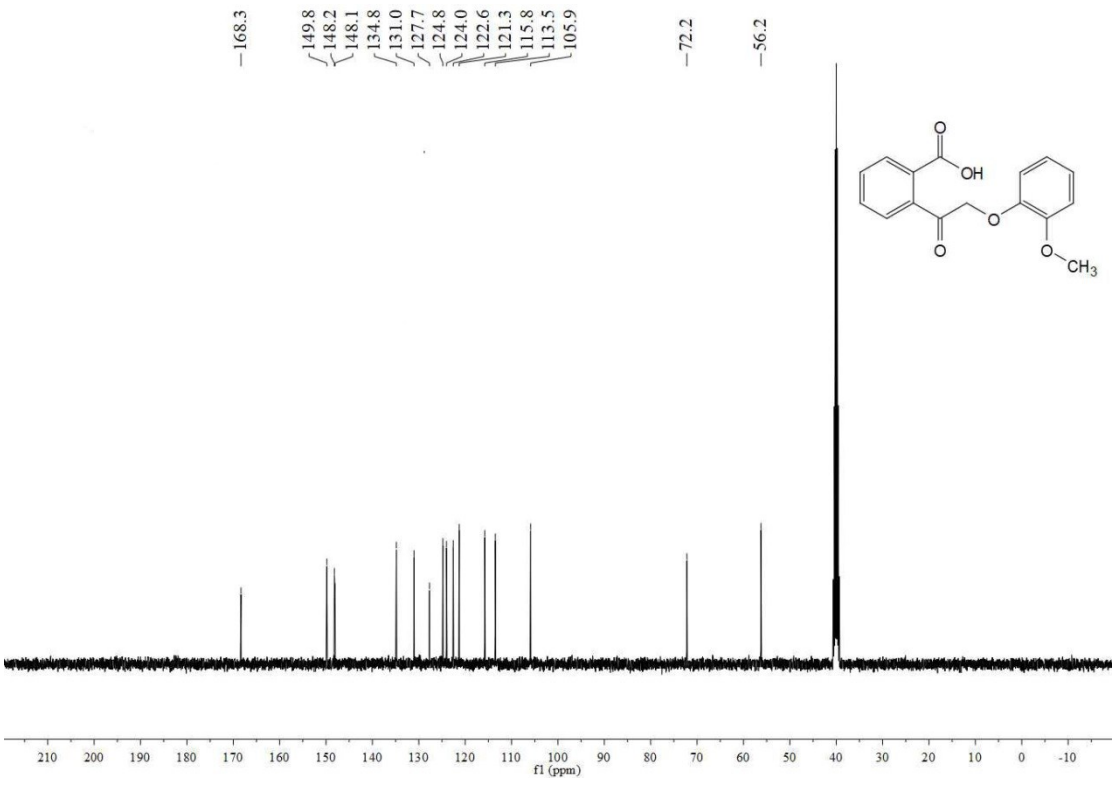


Figure S30. [13]C NMR of 2-(2-(2-methoxyphenoxy)acetyl)benzoic acid **(1o).**

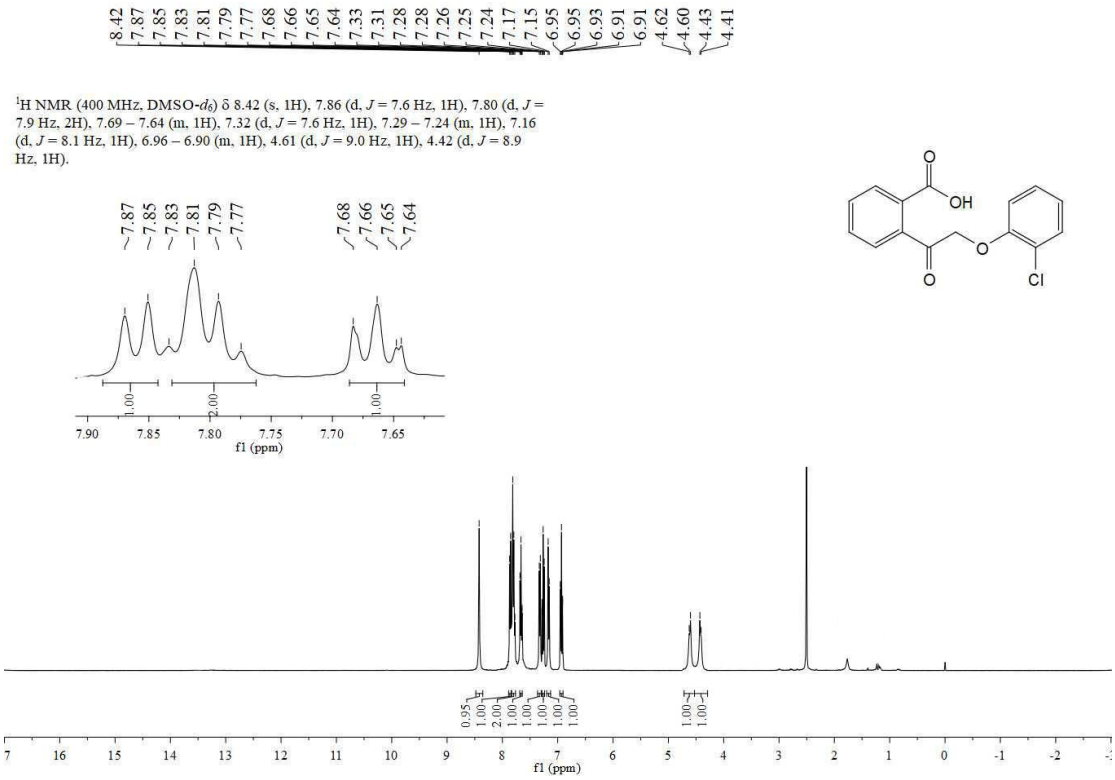


Figure S31. [1]H NMR of 2-(2-(2-chlorophenoxy)acetyl)benzoic acid **(1p).**

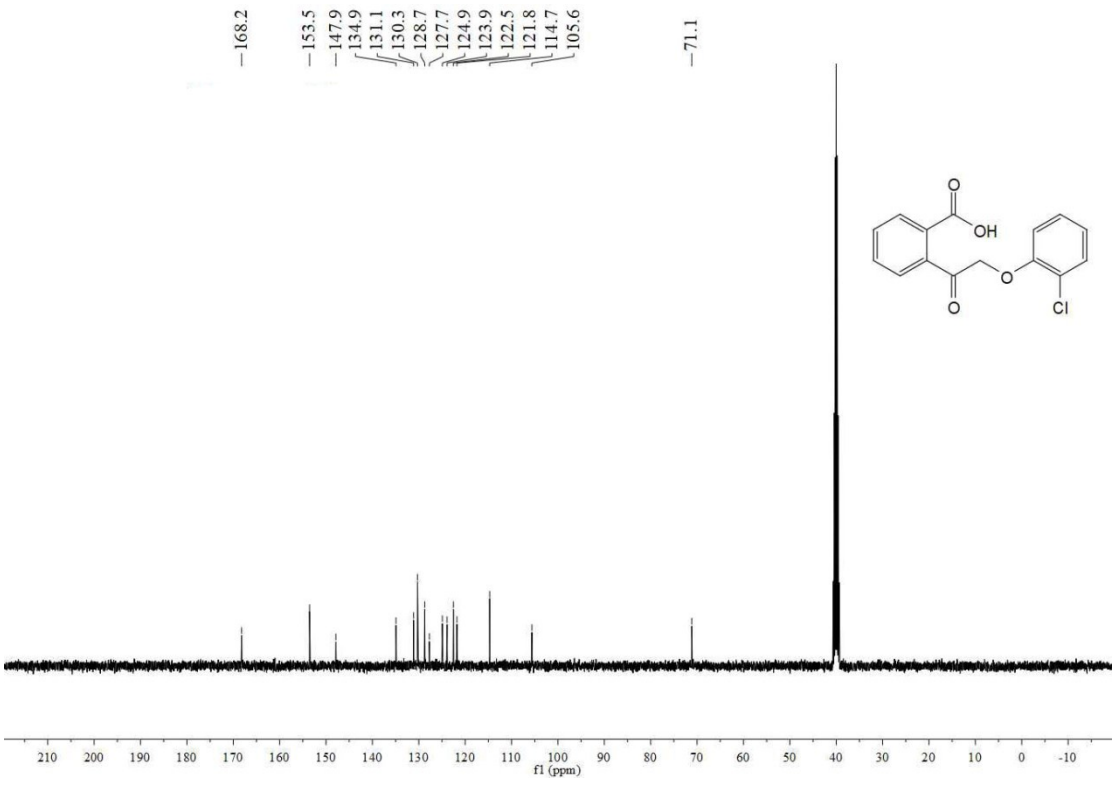


Figure S32. [13]C NMR of 2-(2-(2-chlorophenoxy)acetyl)benzoic acid **(1p).**

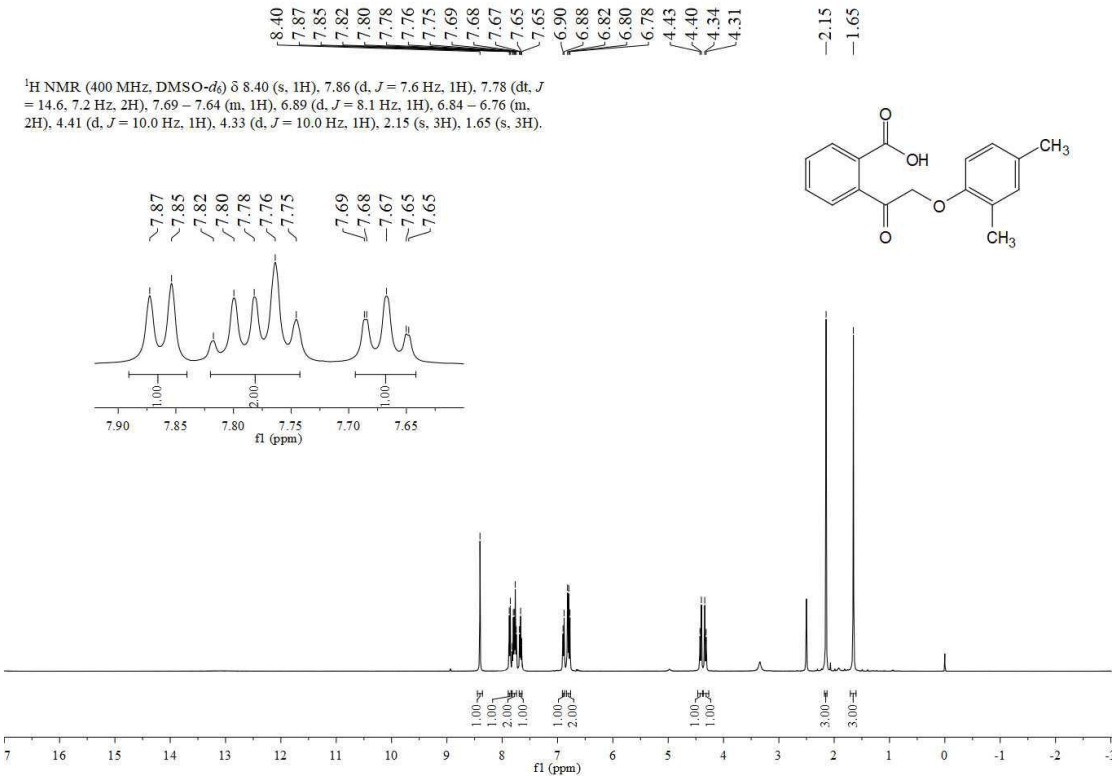


Figure S33. [1]H NMR of 2-(2-(2,4-dimethylphenoxy)acetyl)benzoic acid **(1q).**

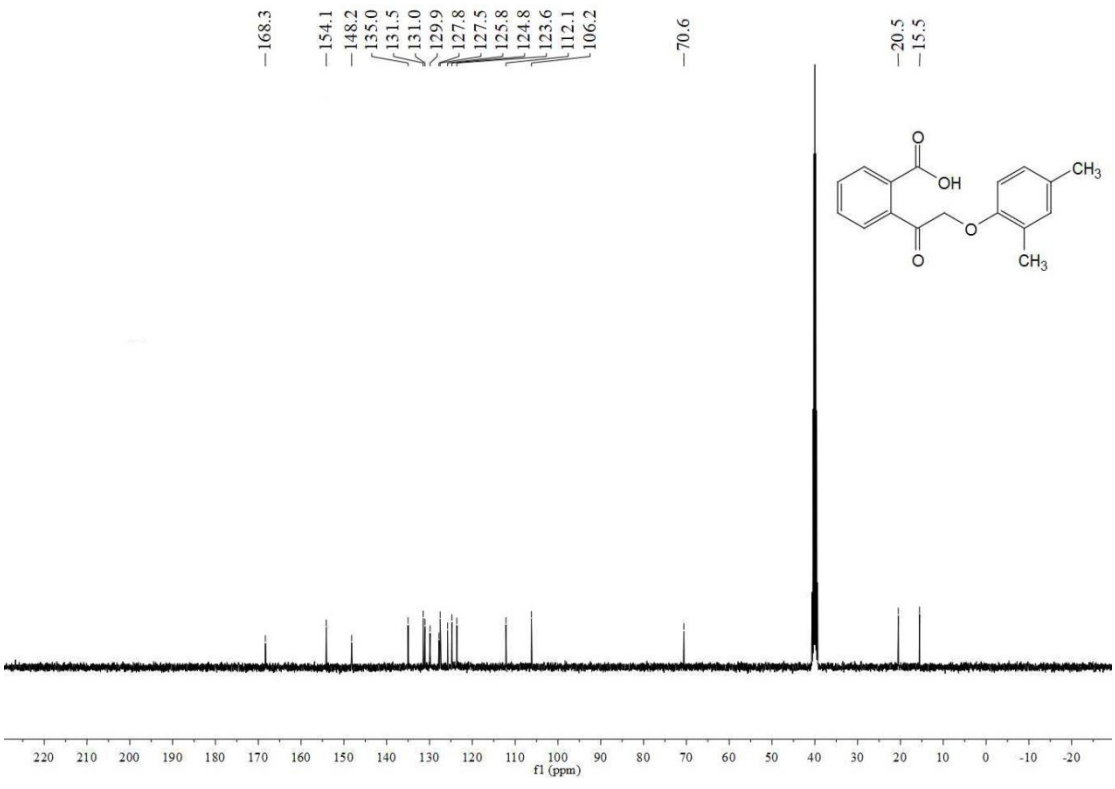


Figure S34. [13]C NMR of 2-(2-(2,4-dimethylphenoxy)acetyl)benzoic acid **(1q).**

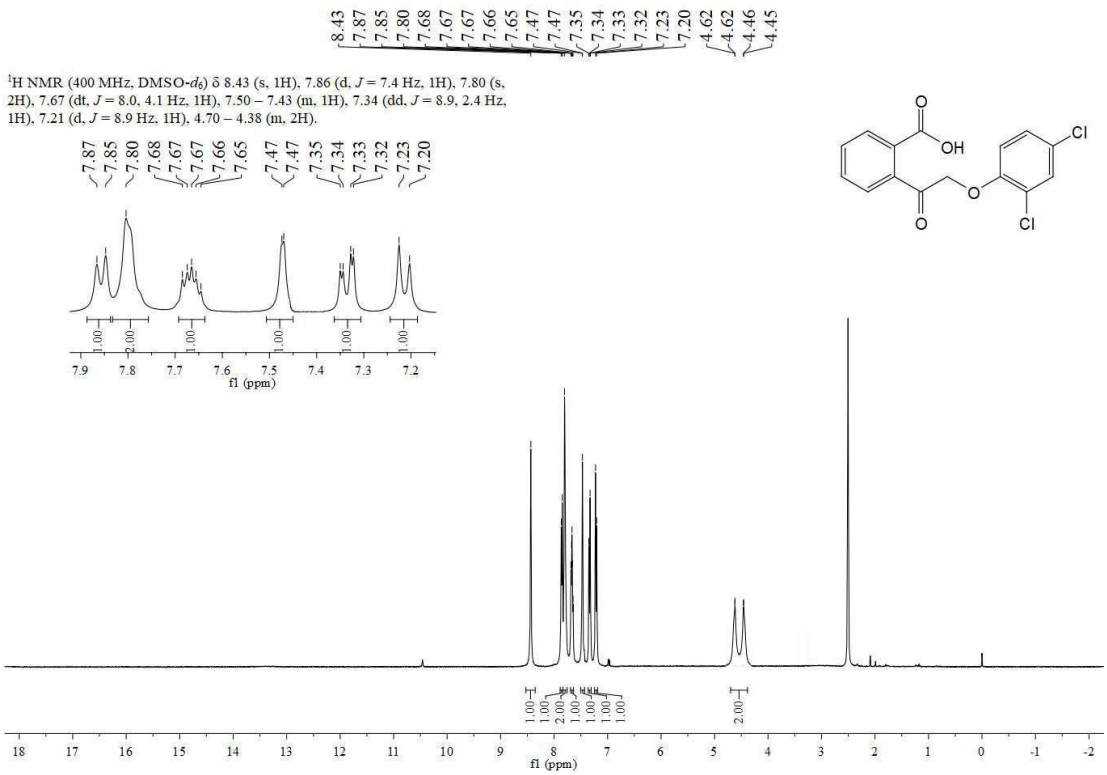


Figure S35. [1]H NMR of 2-(2-(2,4-dichlorophenoxy)acetyl)benzoic acid **(1r).**

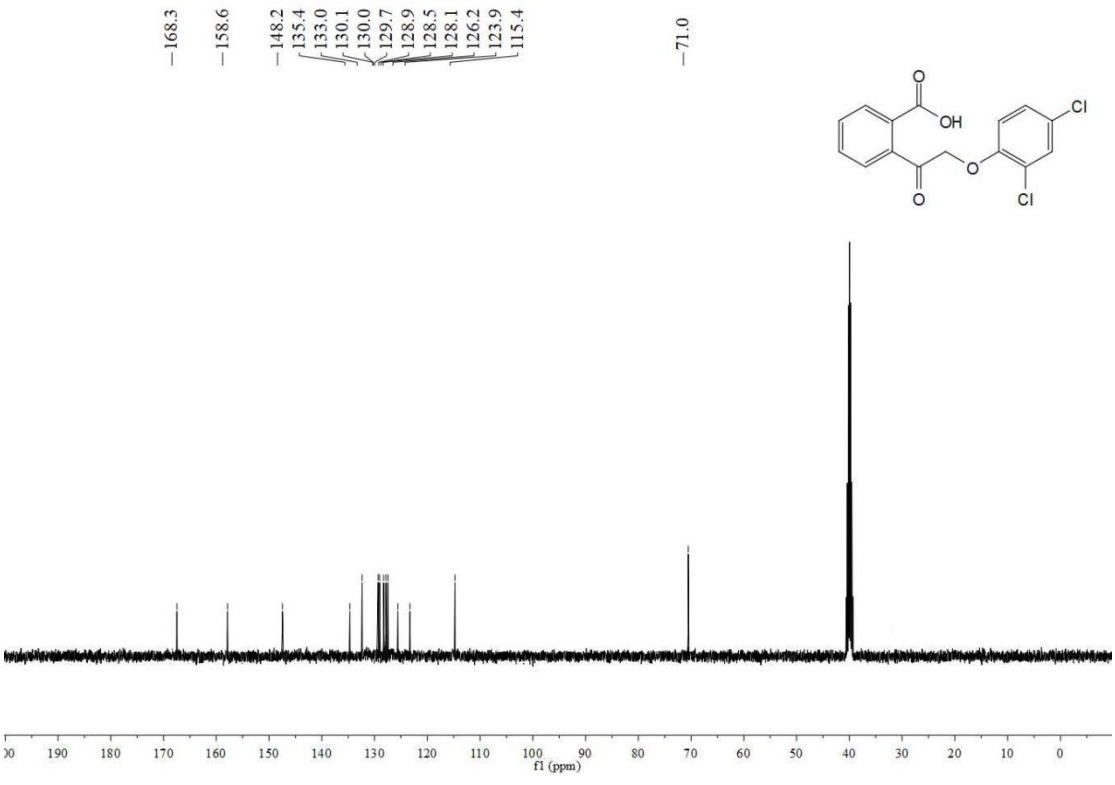


Figure S36. [13]C NMR of 2-(2-(2,4-dichlorophenoxy)acetyl)benzoic acid **(1r).**

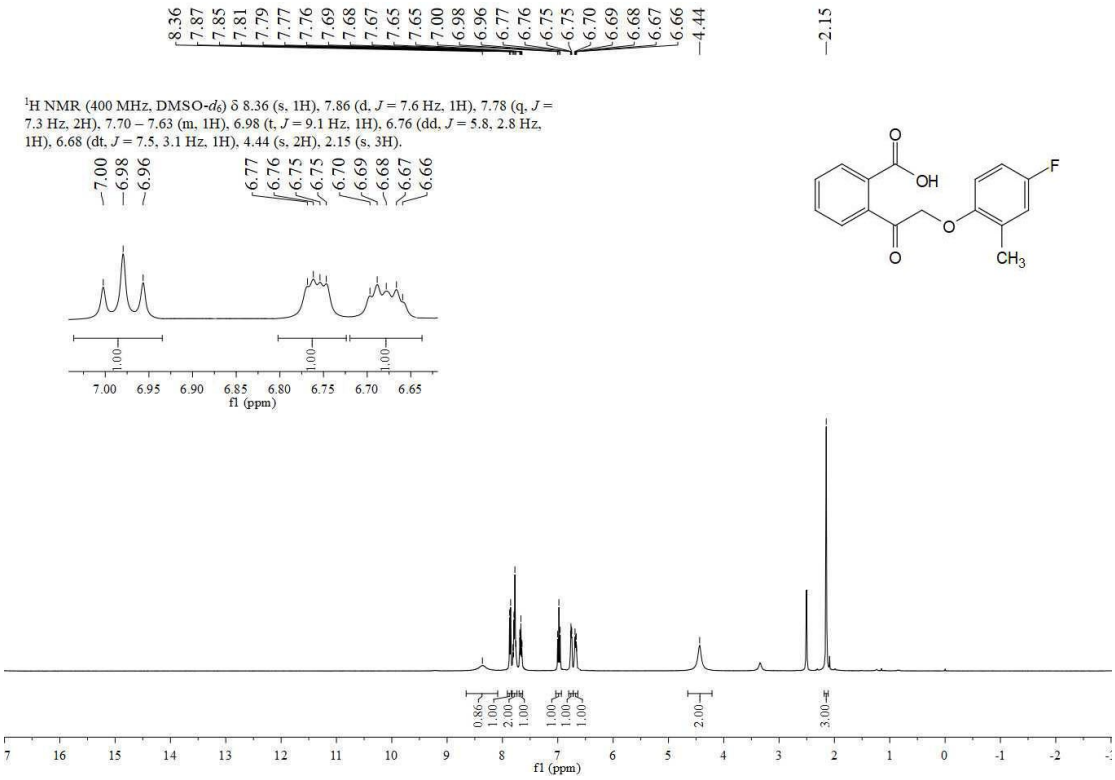


Figure S37. [1]H NMR of 2-(2-(4-fluoro-2-methylphenoxy)acetyl)benzoic acid **(1s).**

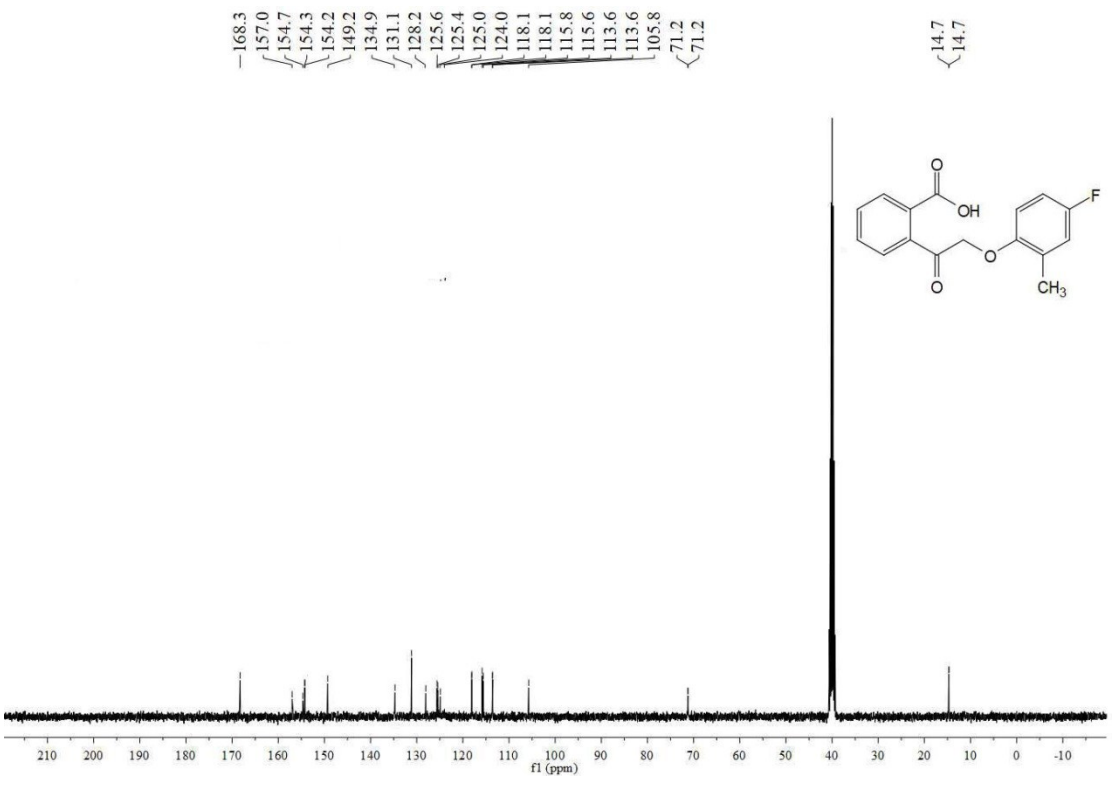


Figure S38. [13]C NMR of 2-(2-(4-fluoro-2-methylphenoxy)acetyl)benzoic acid **(1s).**

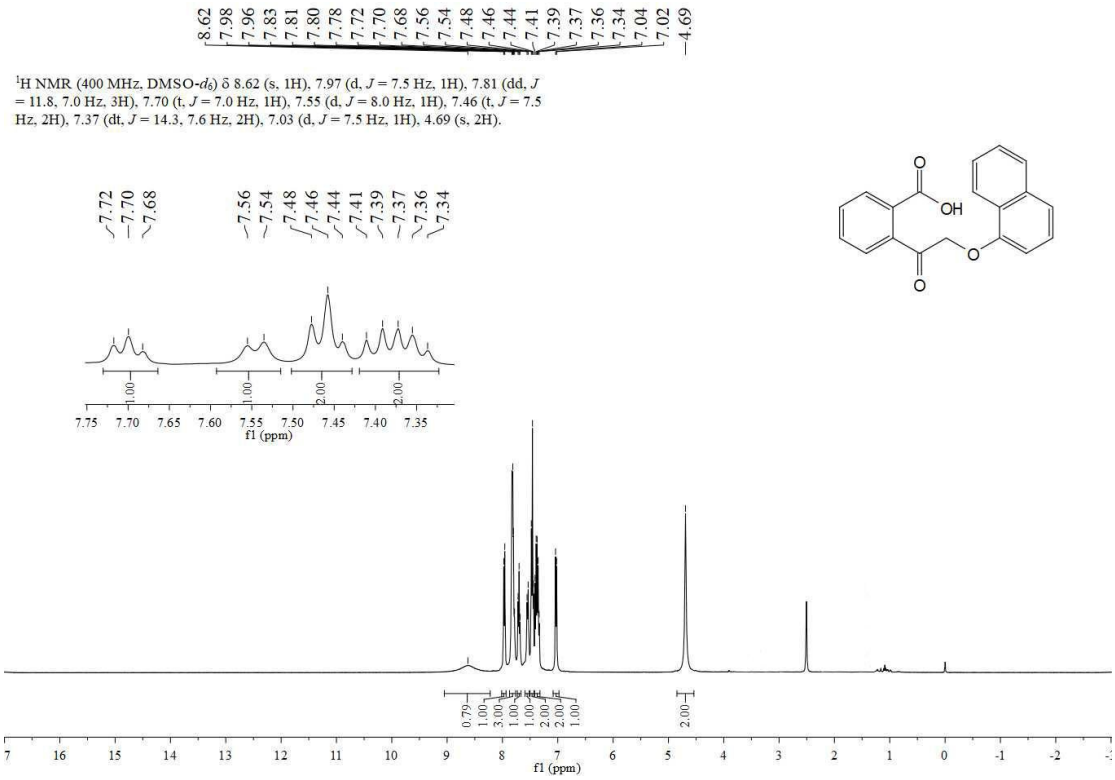


Figure S39. ^{1}H NMR of 2-(2-(naphthalen-1-yloxy)acetyl)benzoic acid **(1t).**

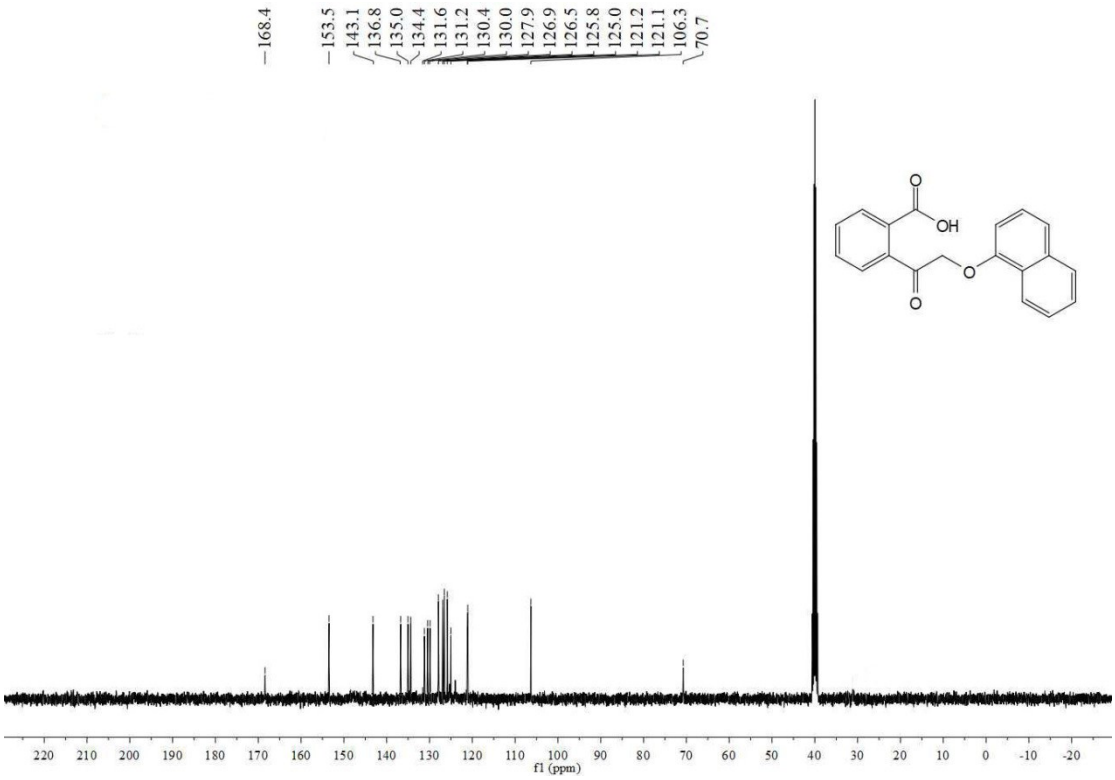


Figure S40. ^{13}C NMR of 2-(2-(naphthalen-1-yloxy)acetyl)benzoic acid **(1t).**

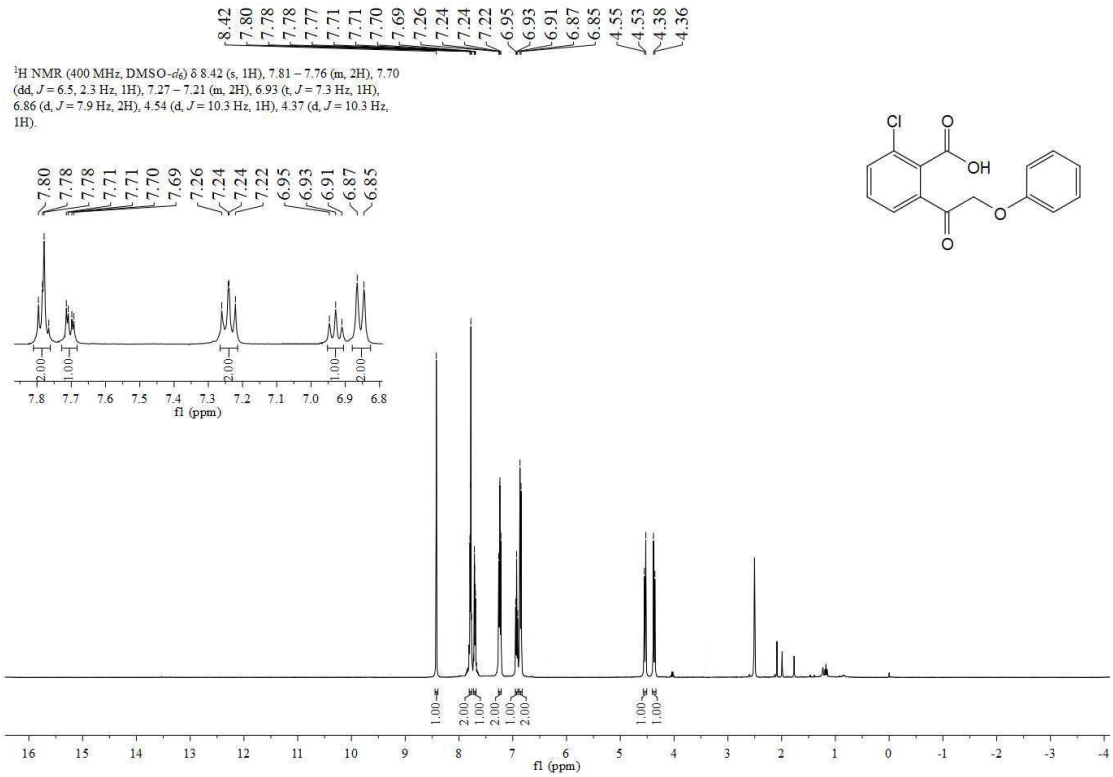


Figure S41. [1]H NMR of 2-chloro-6-(2-phenoxyacetyl)benzoic acid **(1u).**

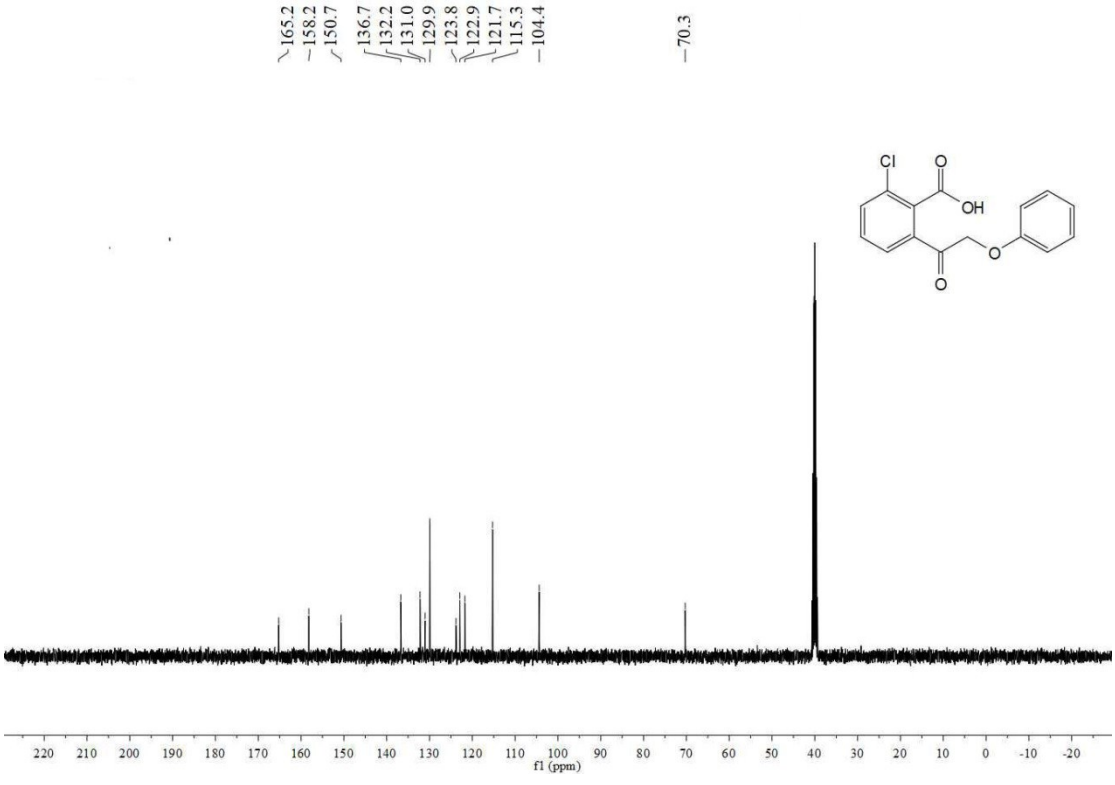


Figure S42. [13]C NMR of 2-chloro-6-(2-phenoxyacetyl)benzoic acid **(1u).**

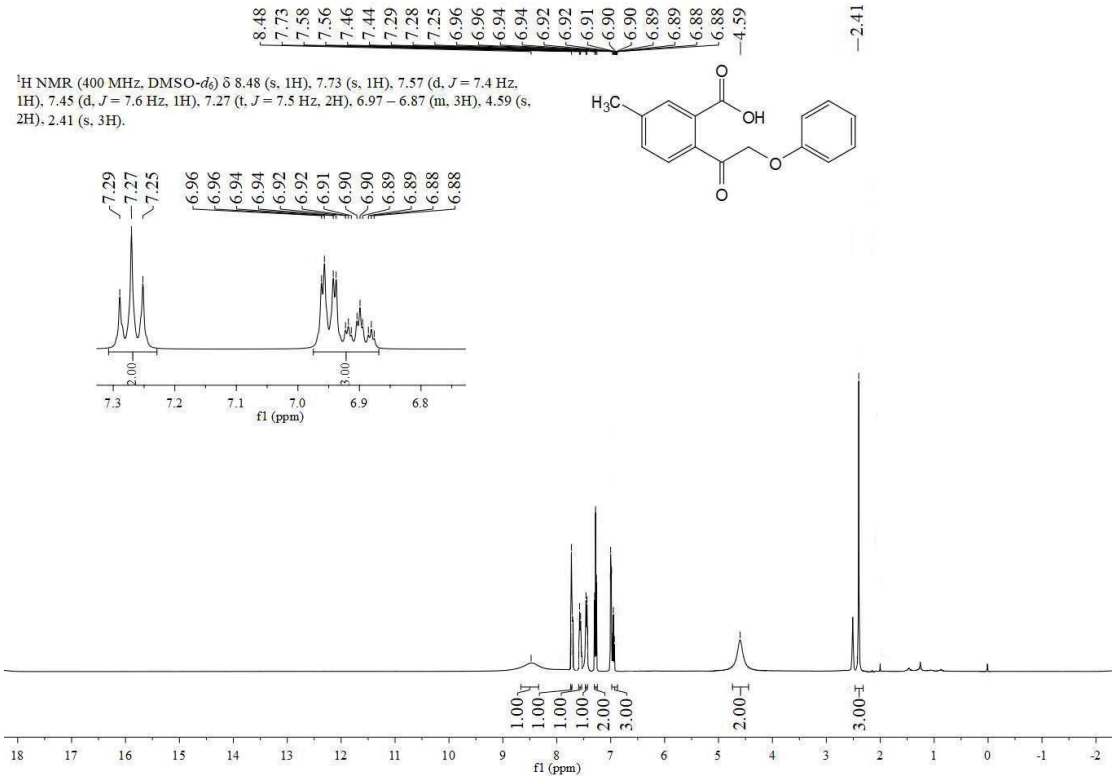


Figure S43. ^{1}H NMR of 5-methyl-2-(2-phenoxyacetyl)benzoic acid **(1v).**

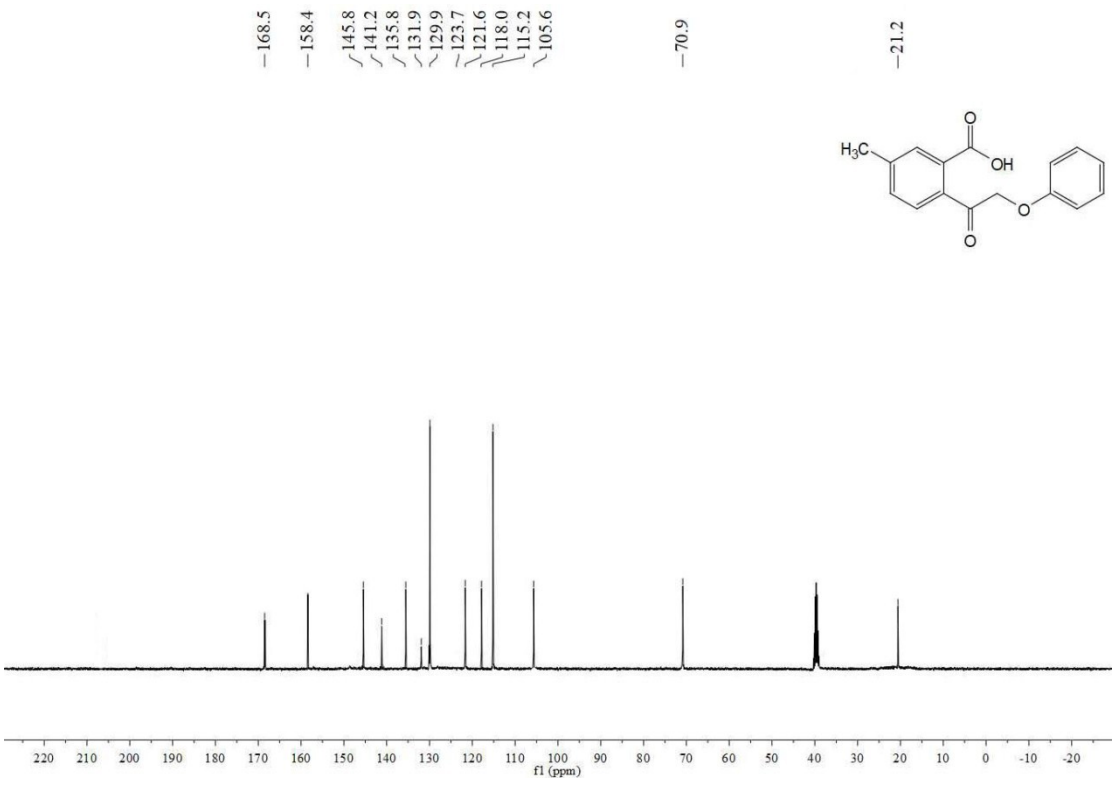


Figure S44. ^{13}C NMR of 5-methyl-2-(2-phenoxyacetyl)benzoic acid **(1v).**

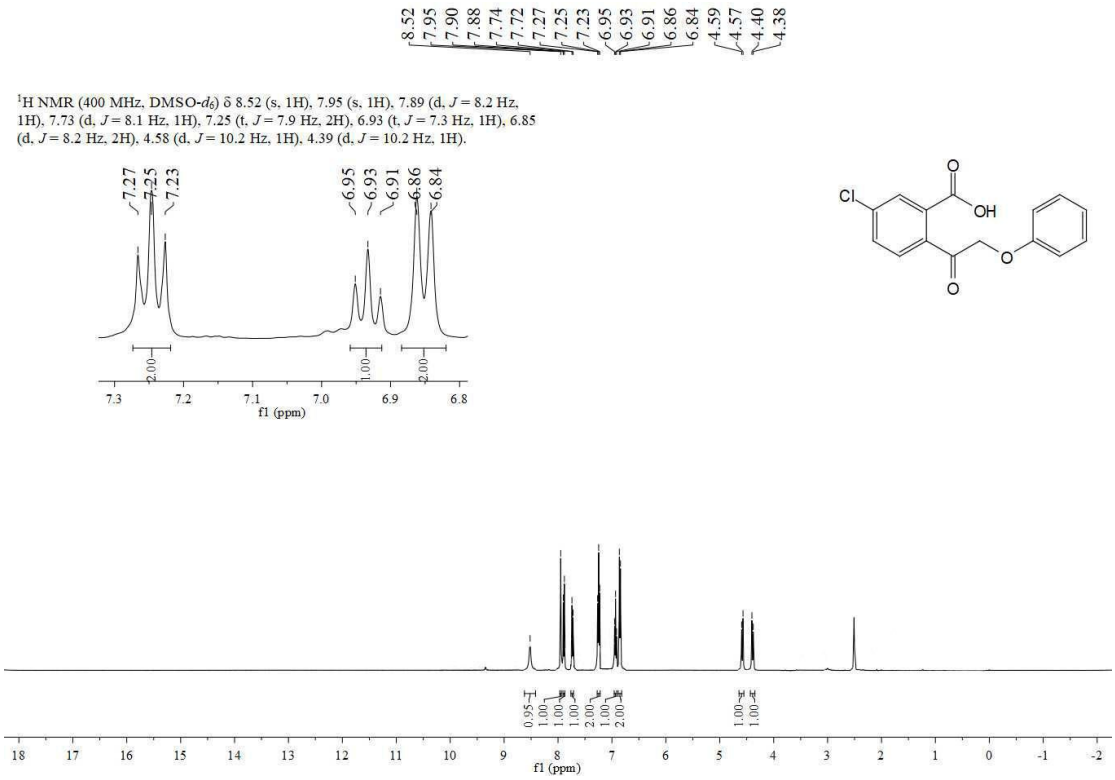


Figure S45. [1]H NMR of 5-chloro-2-(2-phenoxyacetyl)benzoic acid **(1w).**

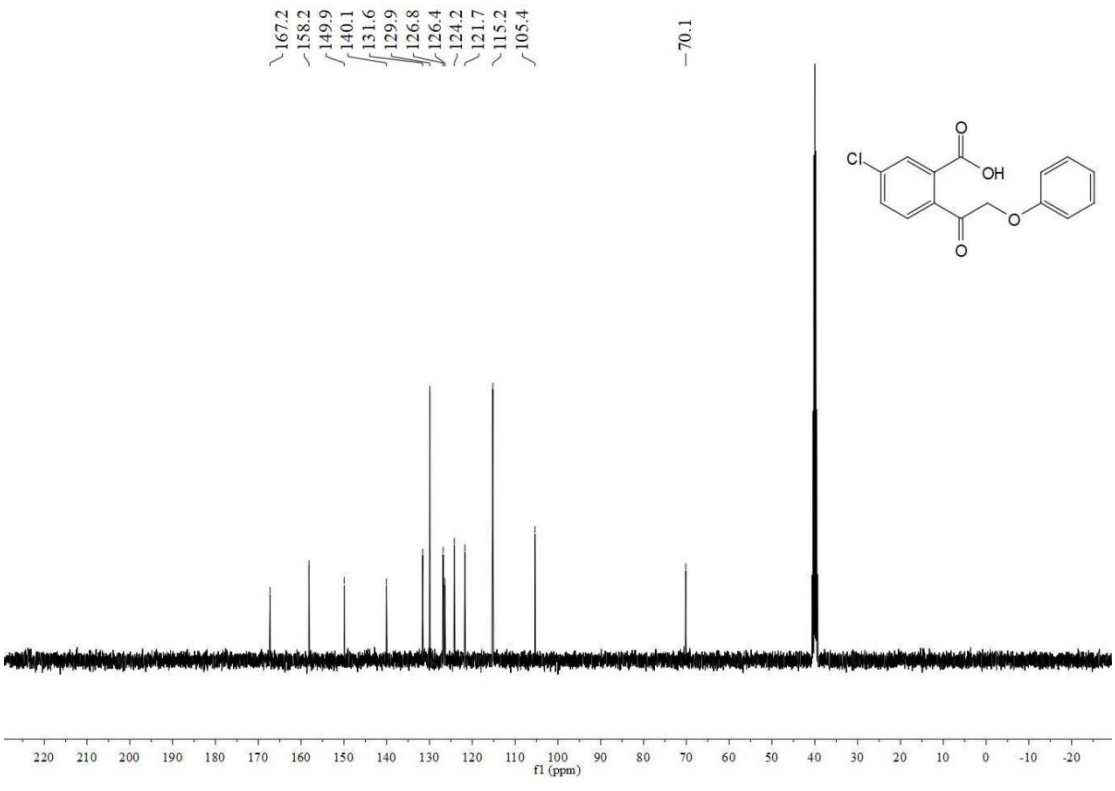


Figure S46. [13]C NMR of 5-chloro-2-(2-phenoxyacetyl)benzoic acid **(1w).**

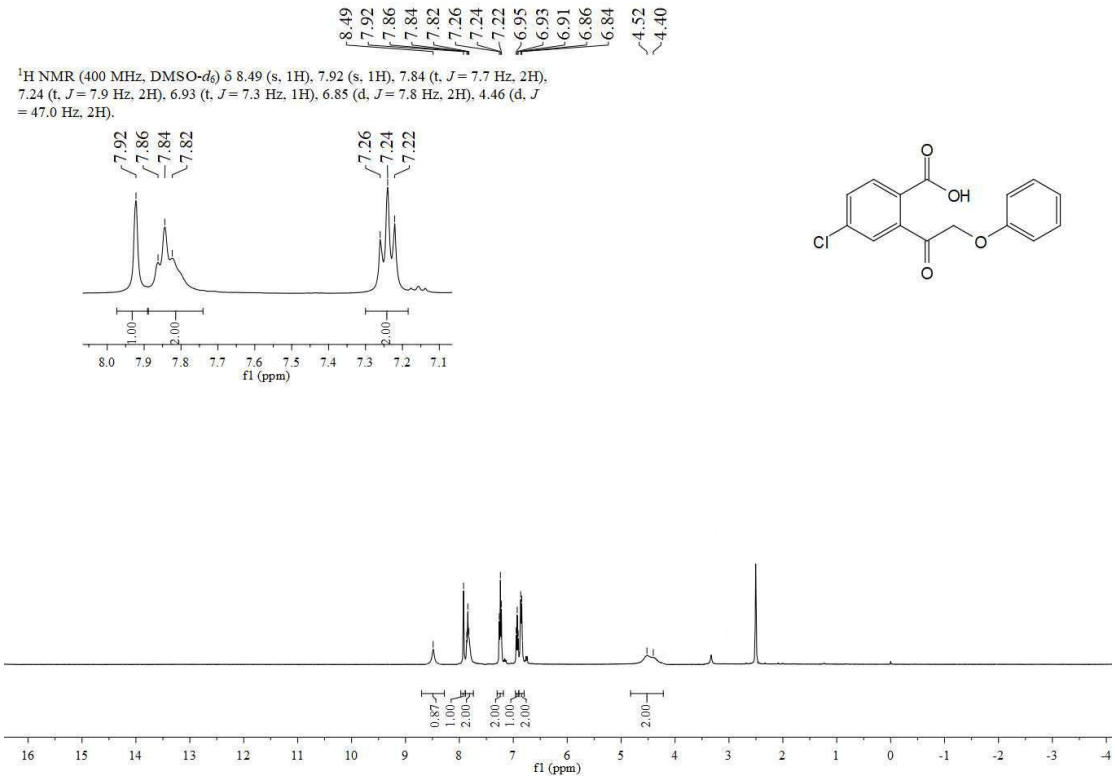


Figure S47. ^{1}H NMR of 4-chloro-2-(2-phenoxyacetyl)benzoic acid **(1x).**

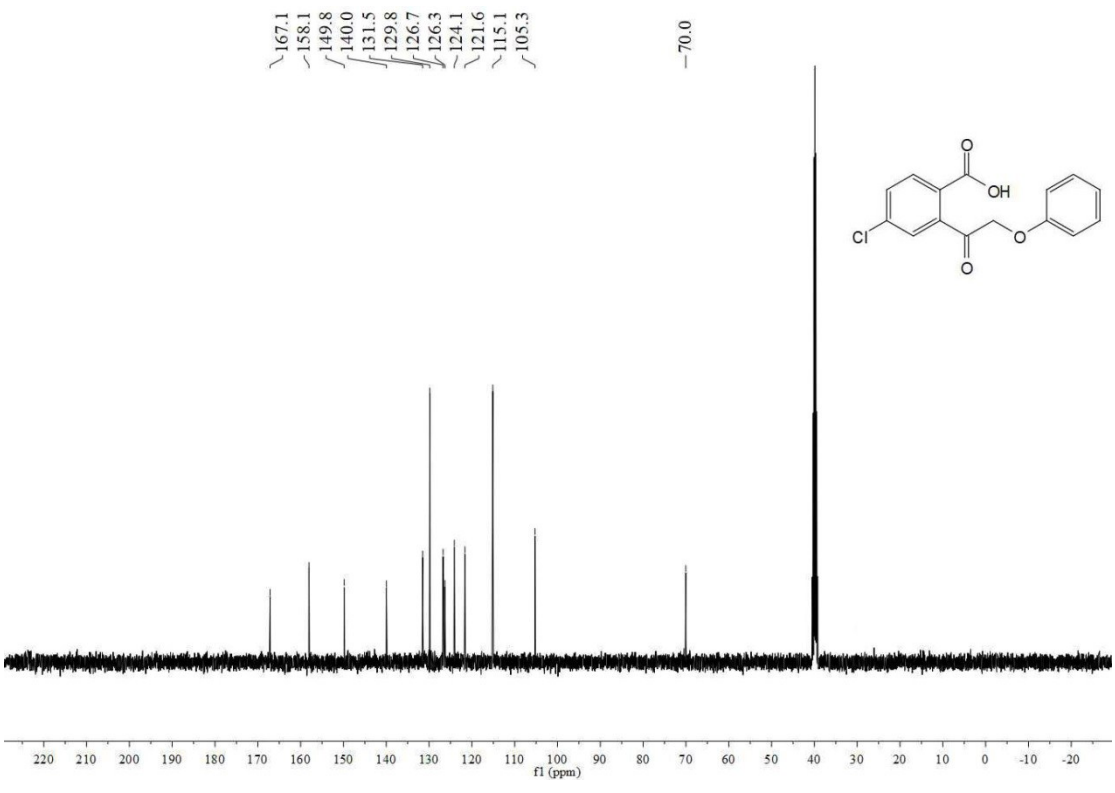


Figure S48. ^{13}C NMR of 4-chloro-2-(2-phenoxyacetyl)benzoic acid **(1x).**

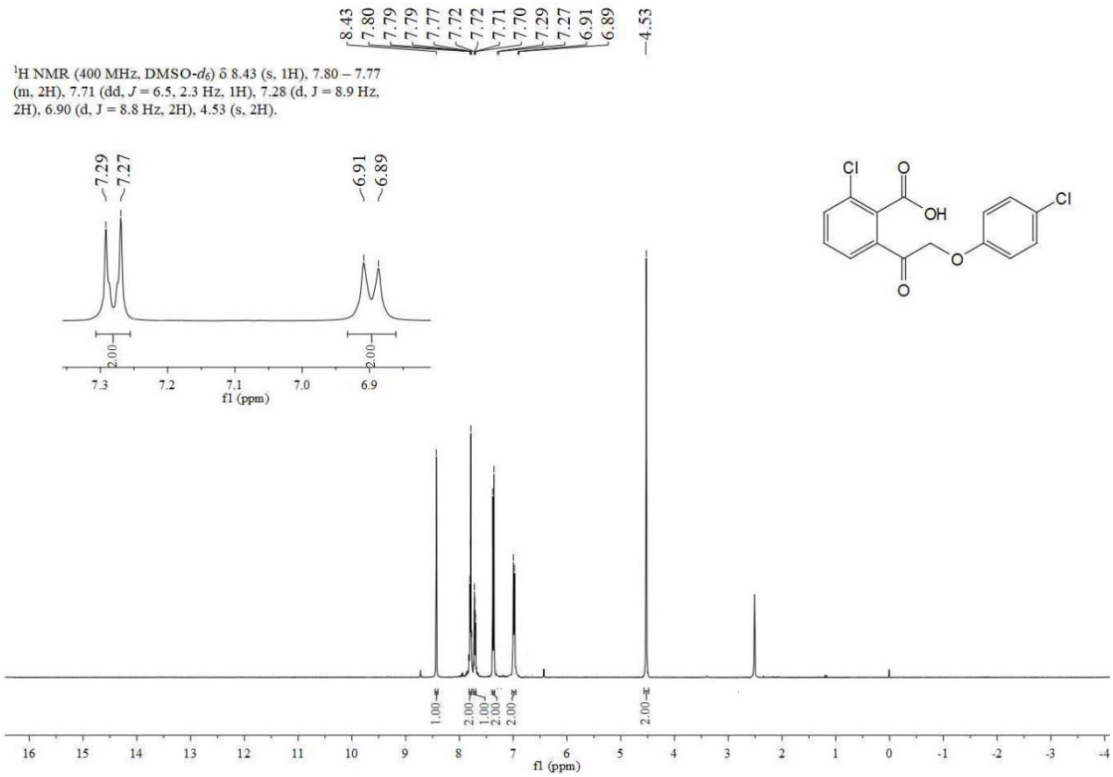


Figure S49. [1]H NMR of 2-chloro-6-(2-(4-chlorophenoxy)acetyl)benzoic acid **(1y).**

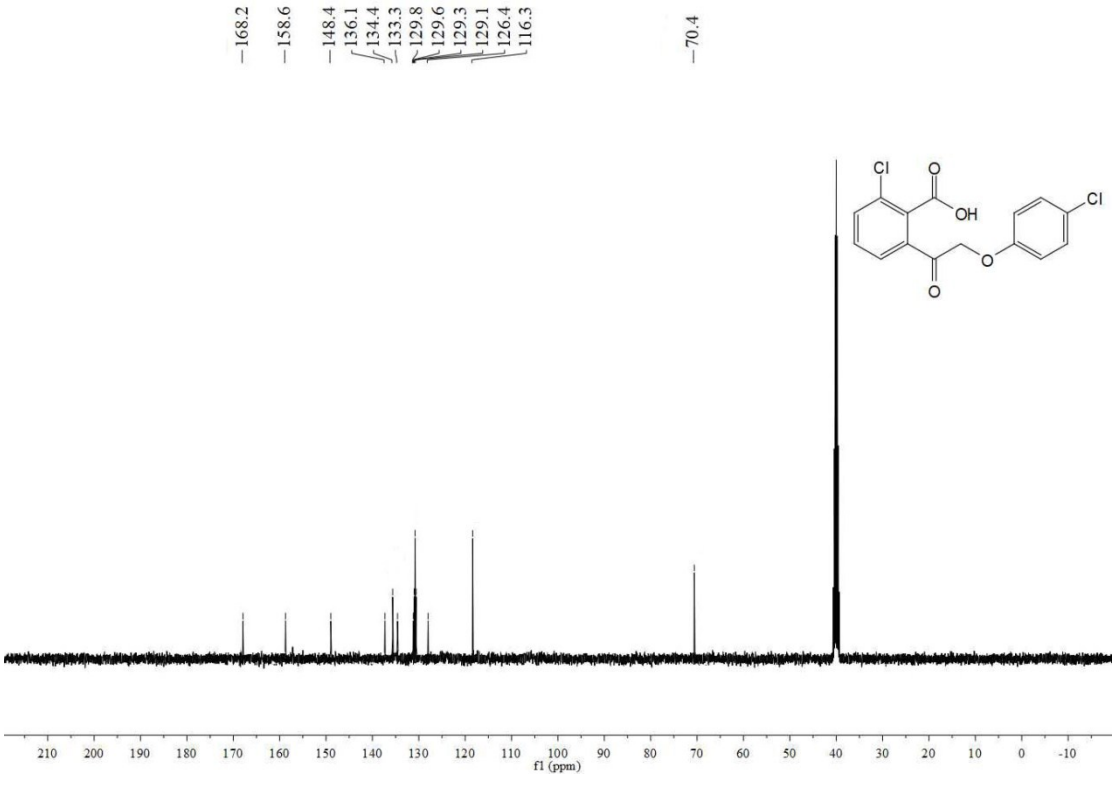


Figure S50. [13]C NMR of 2-chloro-6-(2-(4-chlorophenoxy)acetyl)benzoic acid **(1y).**

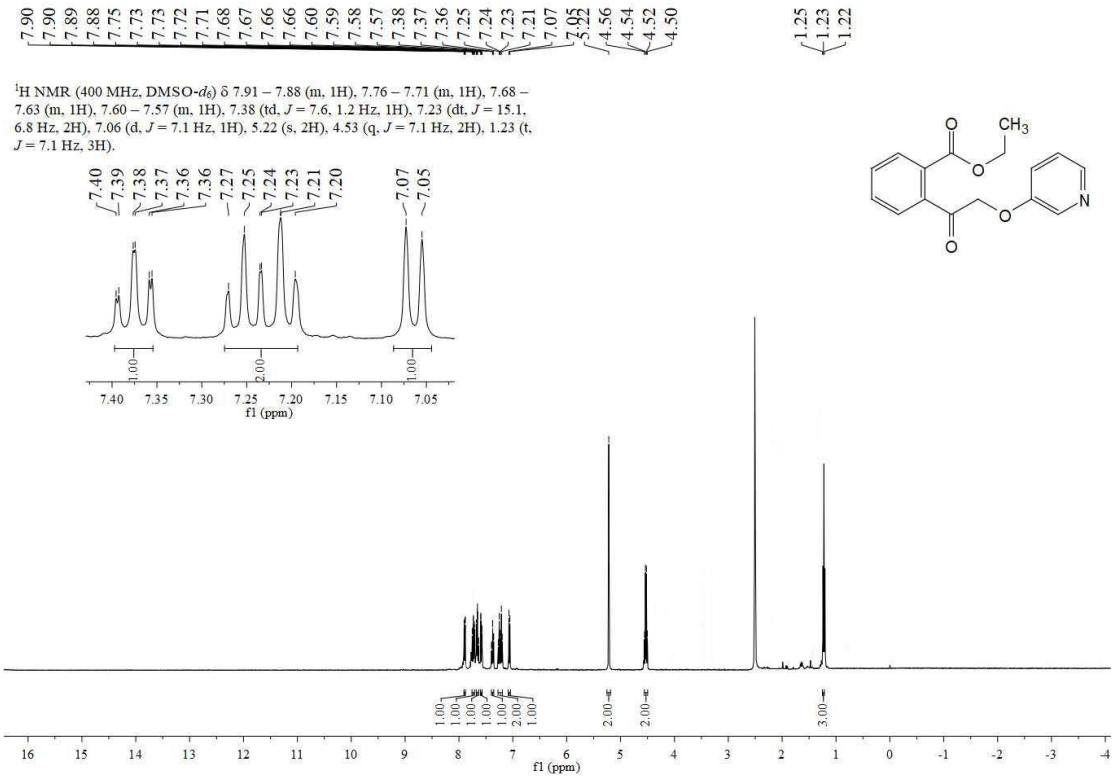


Figure S51. ^{1}H NMR of ethyl 2-(2-(pyridin-3-yloxy)acetyl)benzoate.

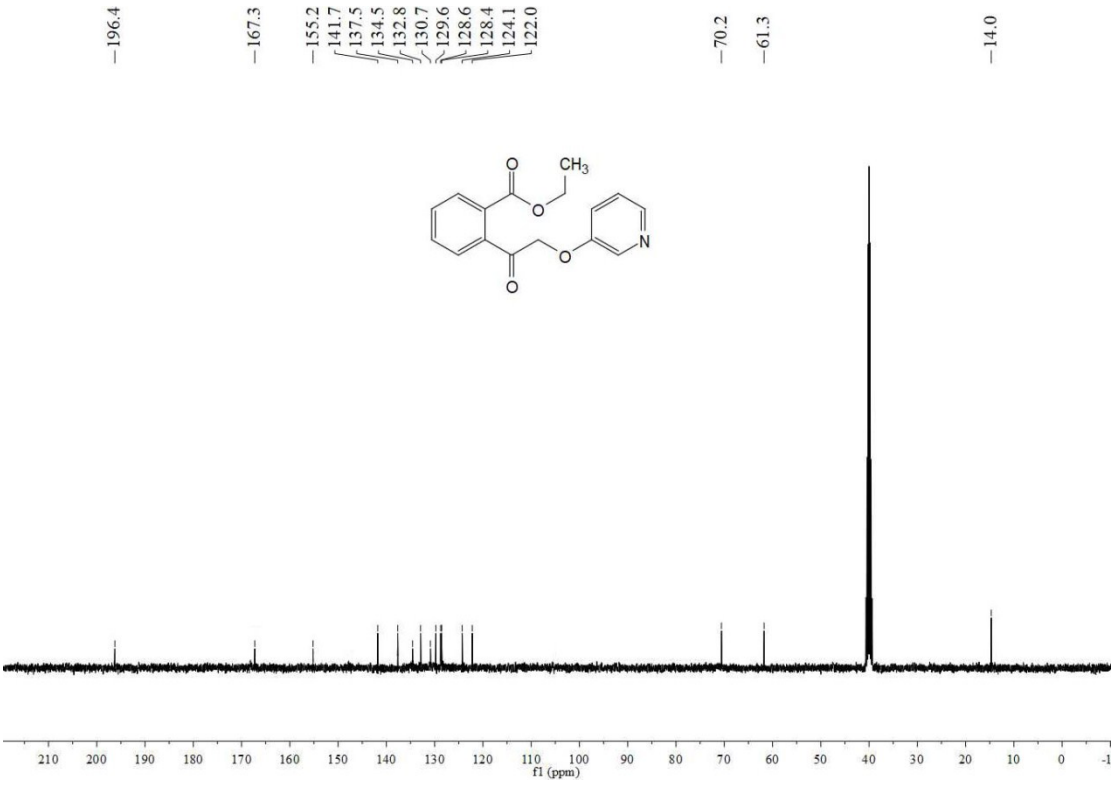


Figure S52. ^{13}C NMR of ethyl 2-(2-(pyridin-3-yloxy)acetyl)benzoate.

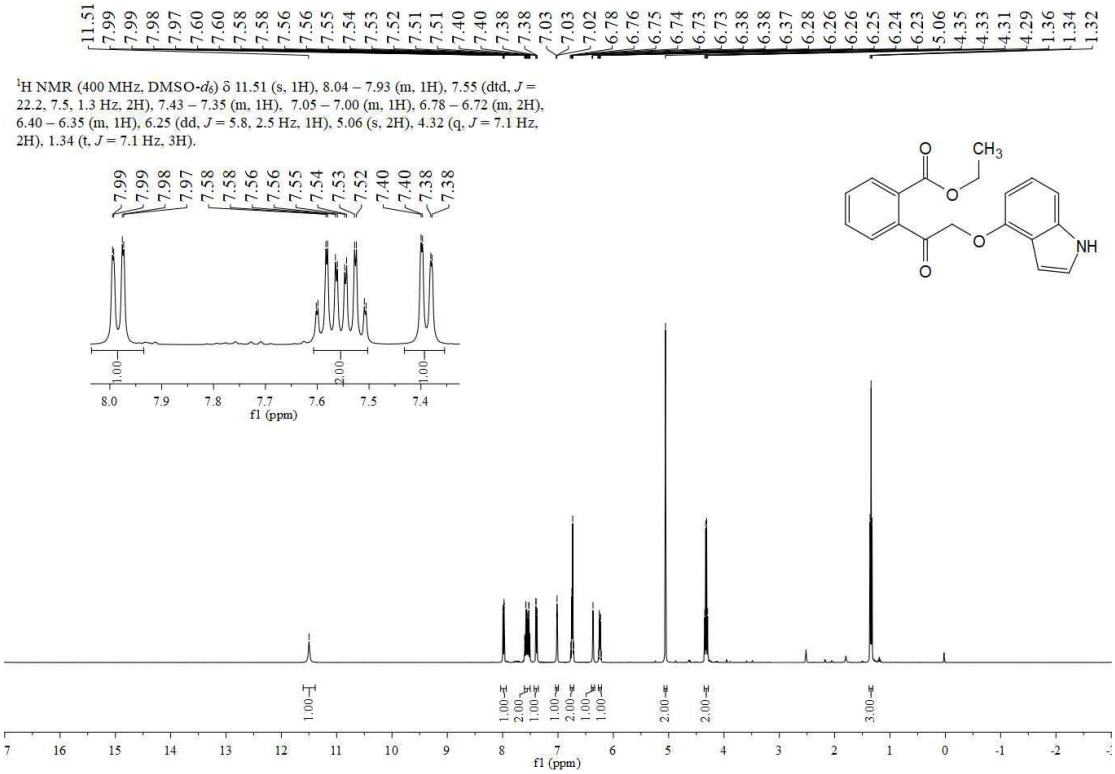


Figure S53. [1]H NMR of ethyl 2-(2-((1H-indol-4-yl)oxy)acetyl)benzoate.

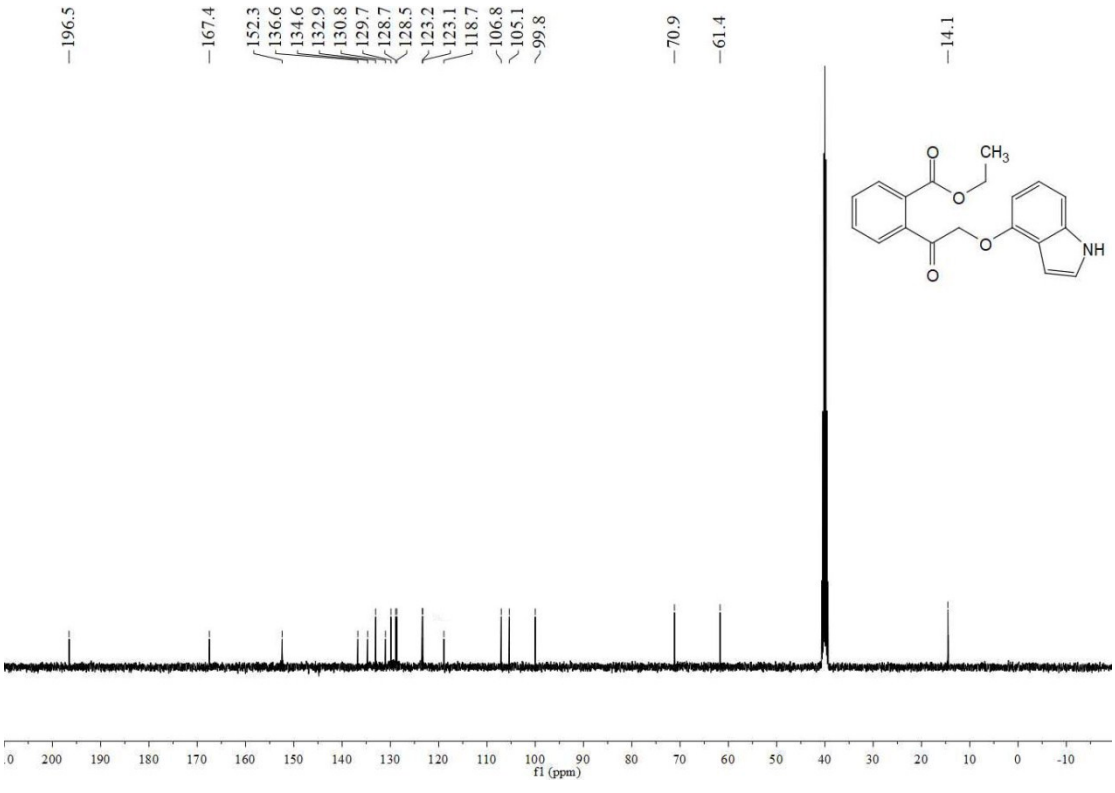


Figure S54. [13]C NMR of ethyl 2-(2-((1H-indol-4-yl)oxy)acetyl)benzoate.

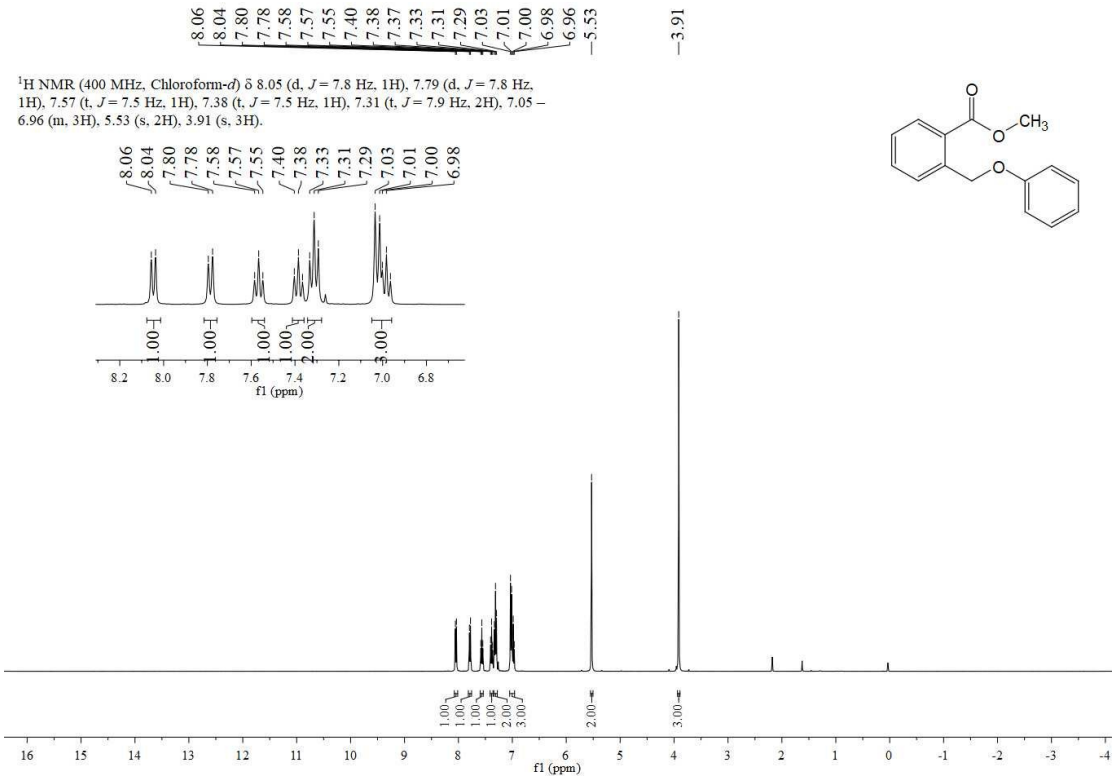


Figure S55. ^{1}H NMR of methyl 2-(phenoxymethyl)benzoate.

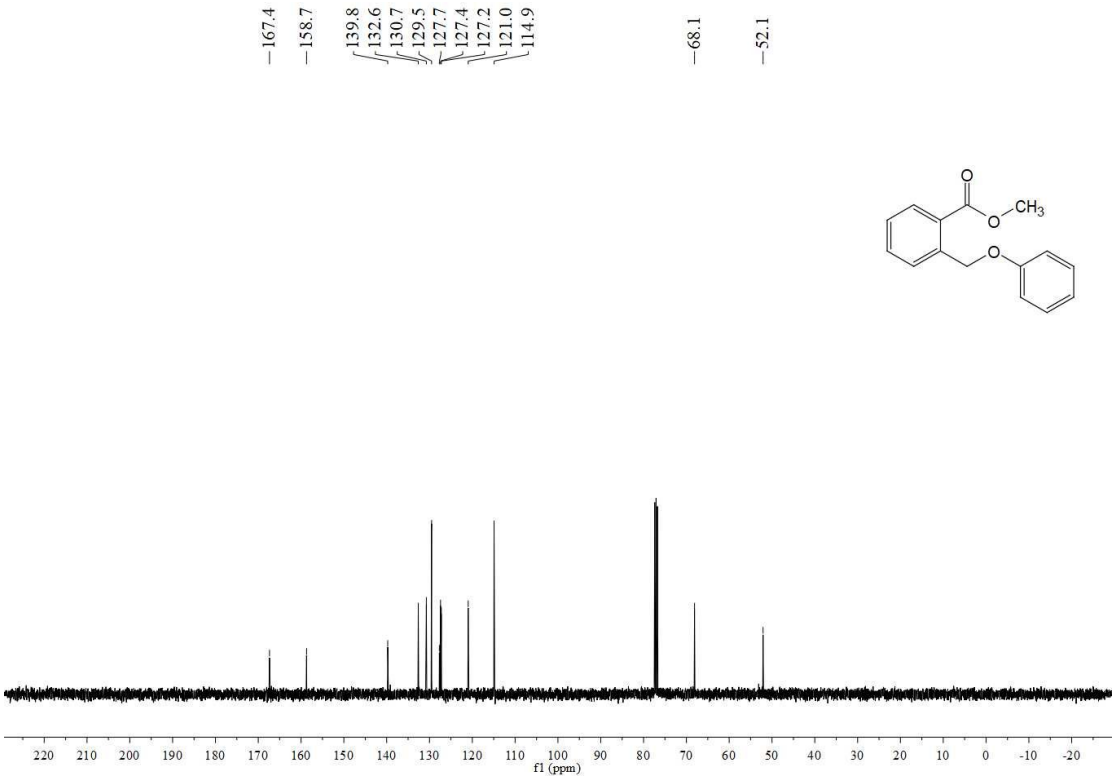


Figure S56. ^{13}C NMR of methyl 2-(phenoxymethyl)benzoate.

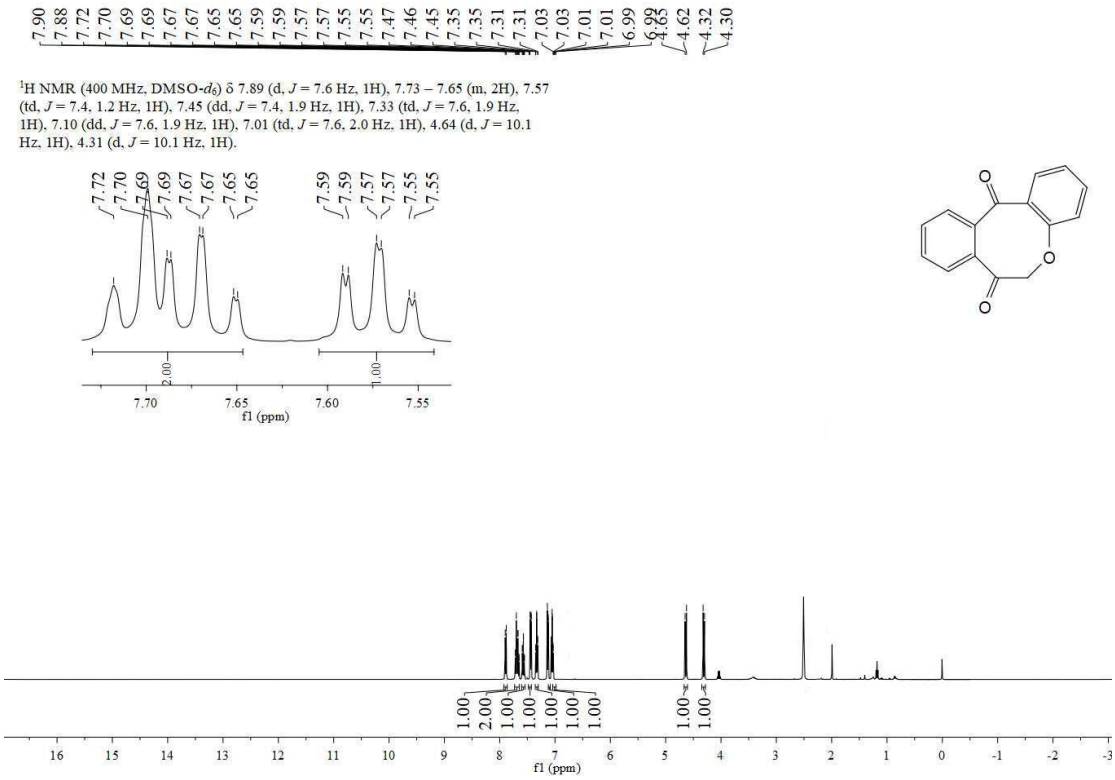


Figure S57. [1]H NMR of 6H-dibenzo[b,e]oxocine-7,12-dione **(2a).**

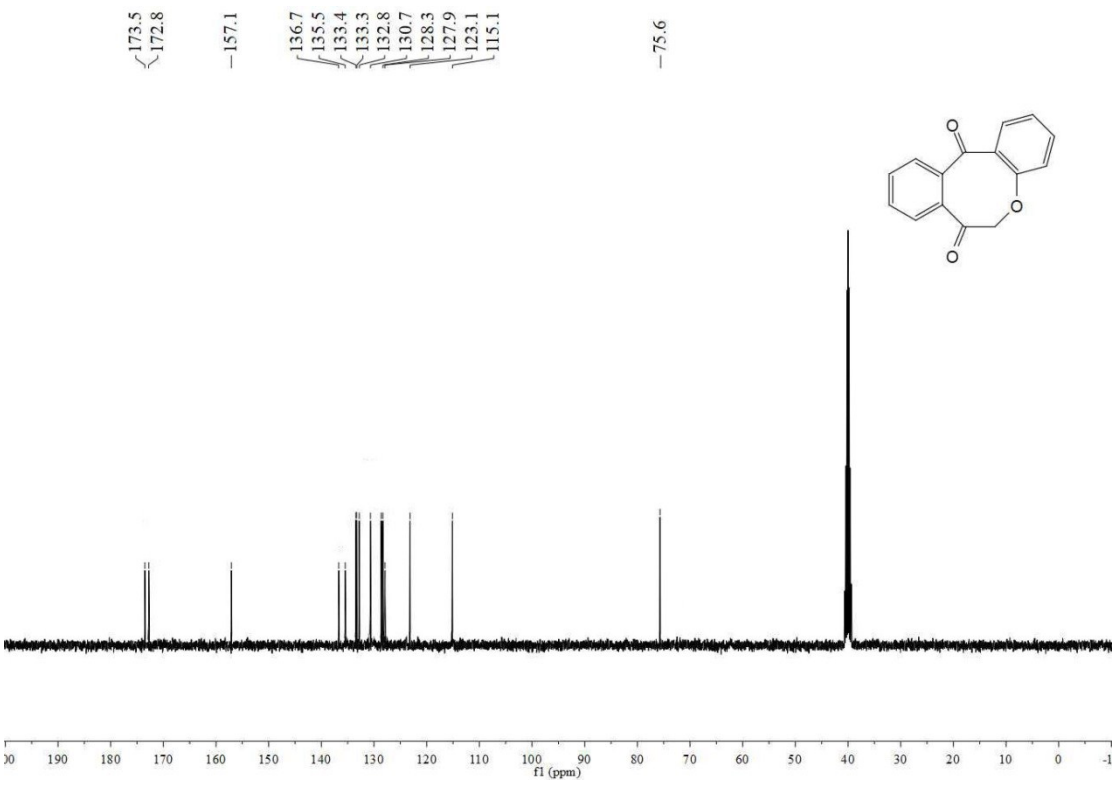


Figure S58. [13]C NMR of 6H-dibenzo[b,e]oxocine-7,12-dione **(2a).**

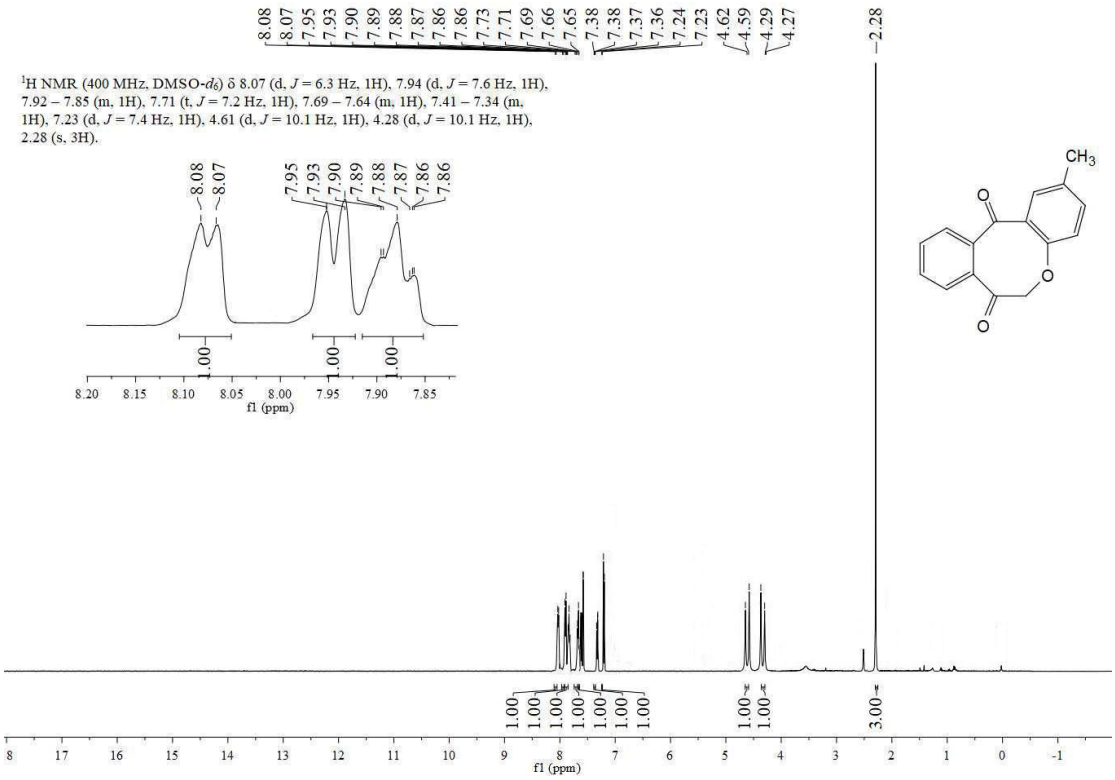


Figure S59. [1]H NMR of 2-methyl-6H-dibenzo[b,e]oxocine-7,12-dione **(2b).**

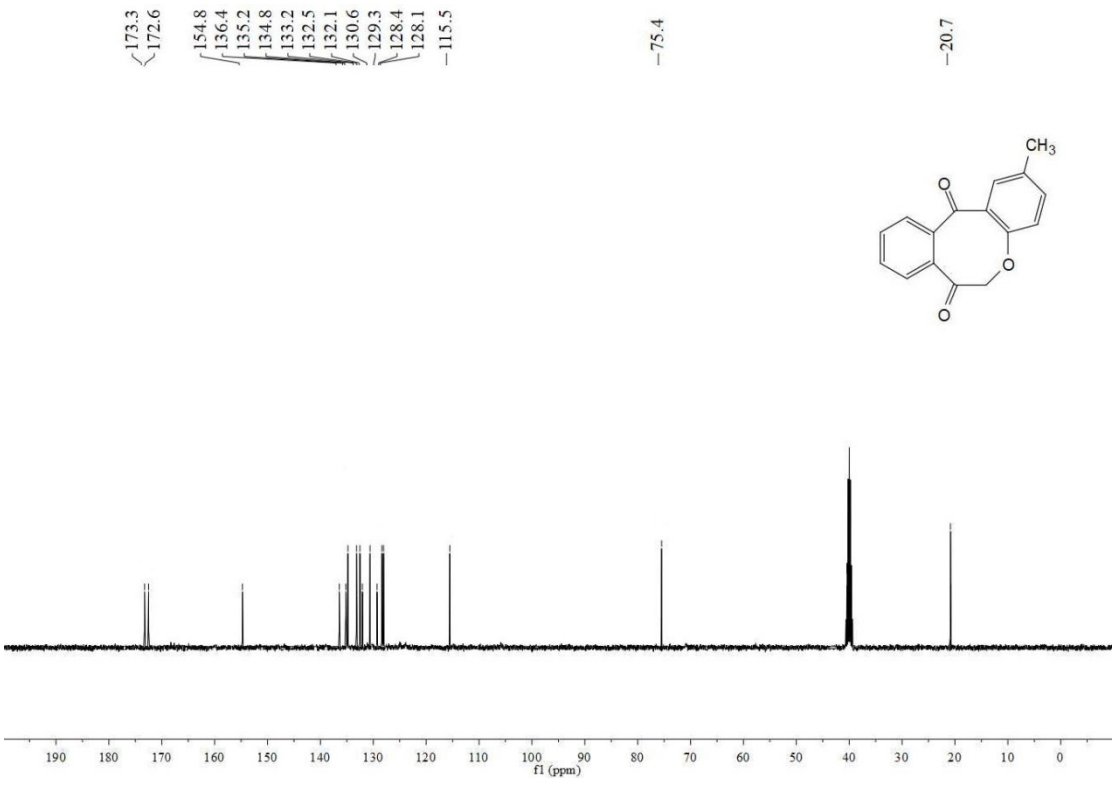


Figure S60. [13]C NMR of 2-methyl-6H-dibenzo[b,e]oxocine-7,12-dione **(2b).**

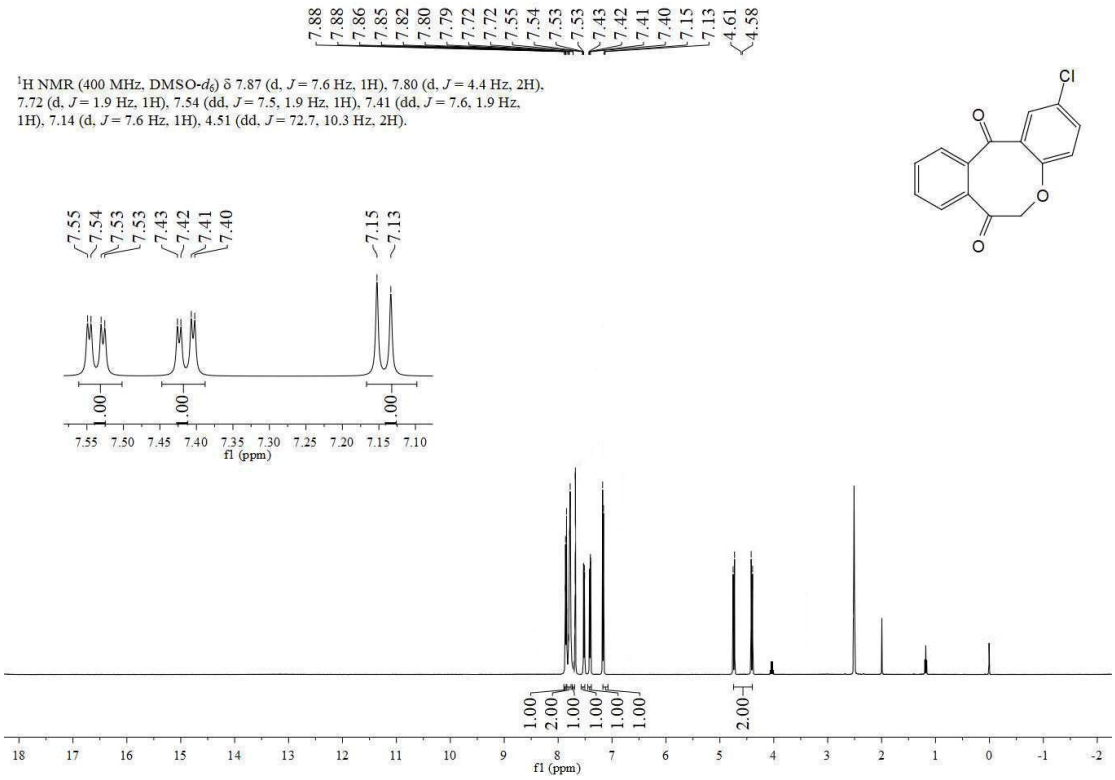


Figure S61. [1]H NMR of 2-chloro-6H-dibenzo[b,e]oxocine-7,12-dione **(2c).**

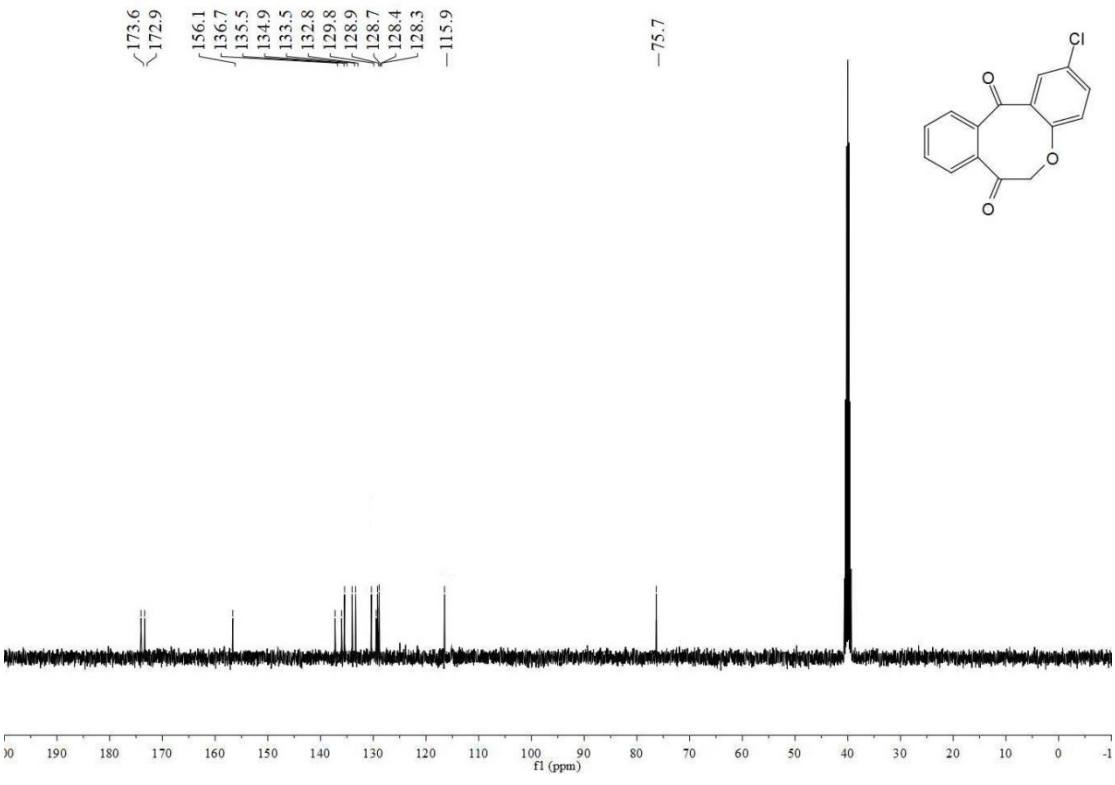


Figure S62. [13]C NMR of 2-chloro-6H-dibenzo[b,e]oxocine-7,12-dione **(2c).**

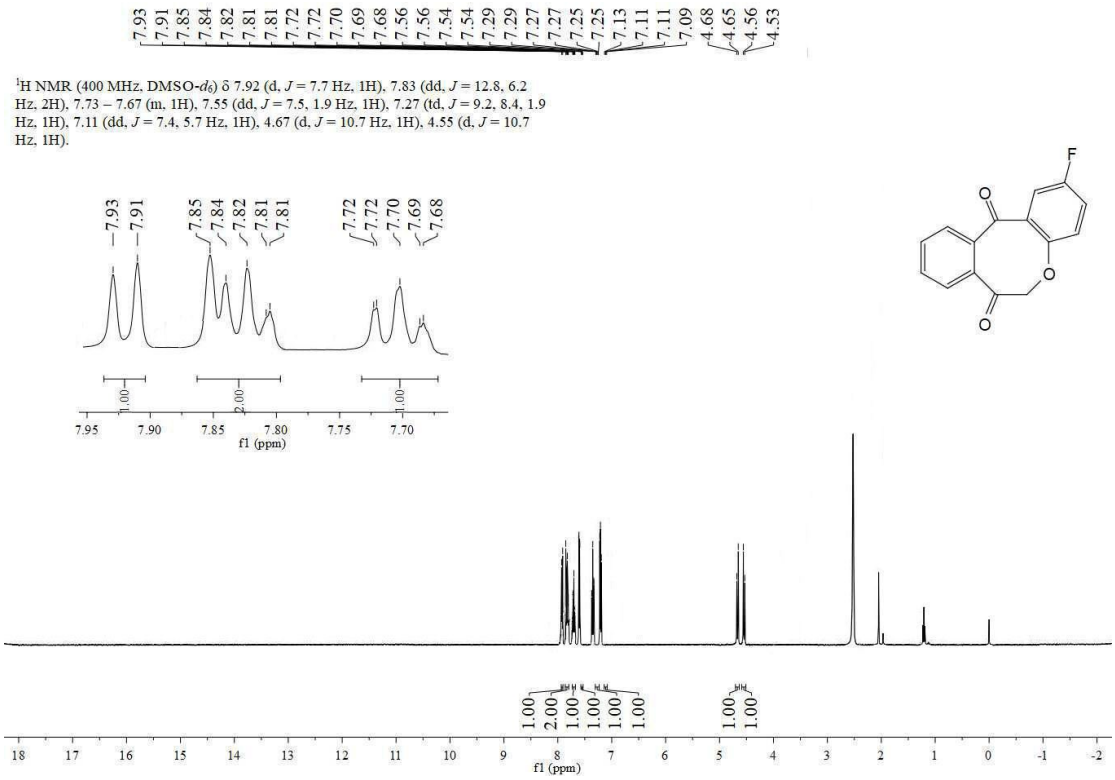


Figure S63. [1]H NMR of 2-fluoro-6H-dibenzo[b,e]oxocine-7,12-dione **(2d).**

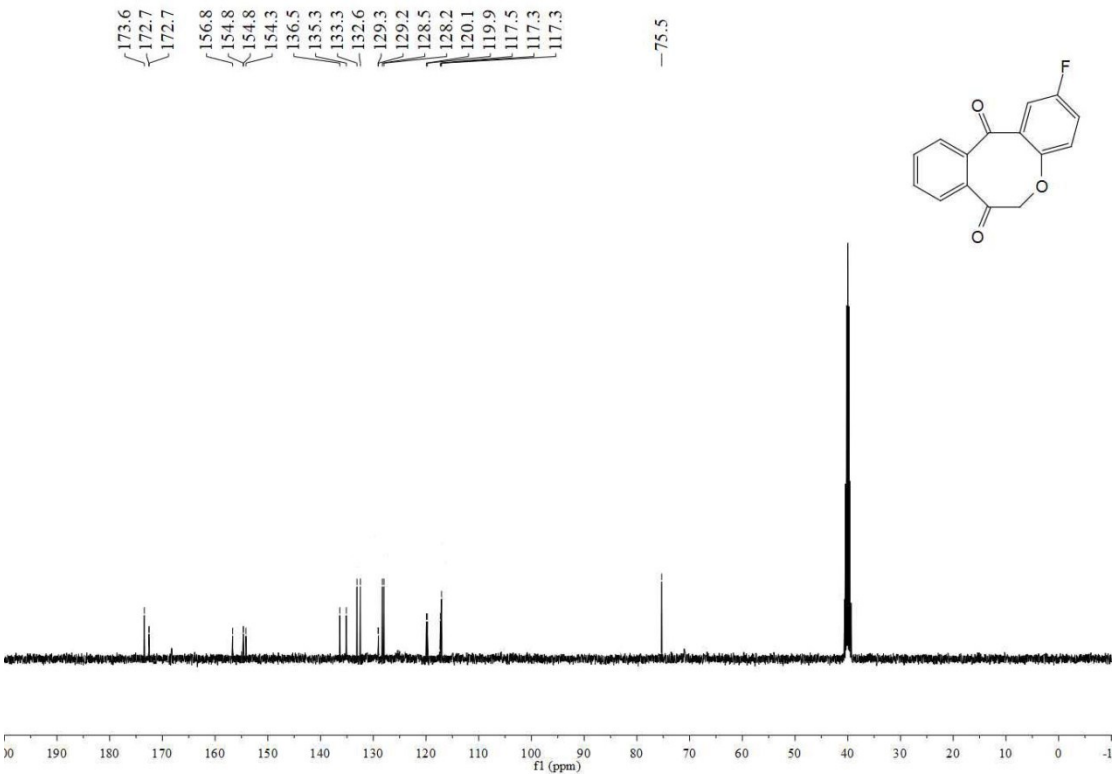


Figure S64. [13]C NMR of 2-fluoro-6H-dibenzo[b,e]oxocine-7,12-dione **(2d).**

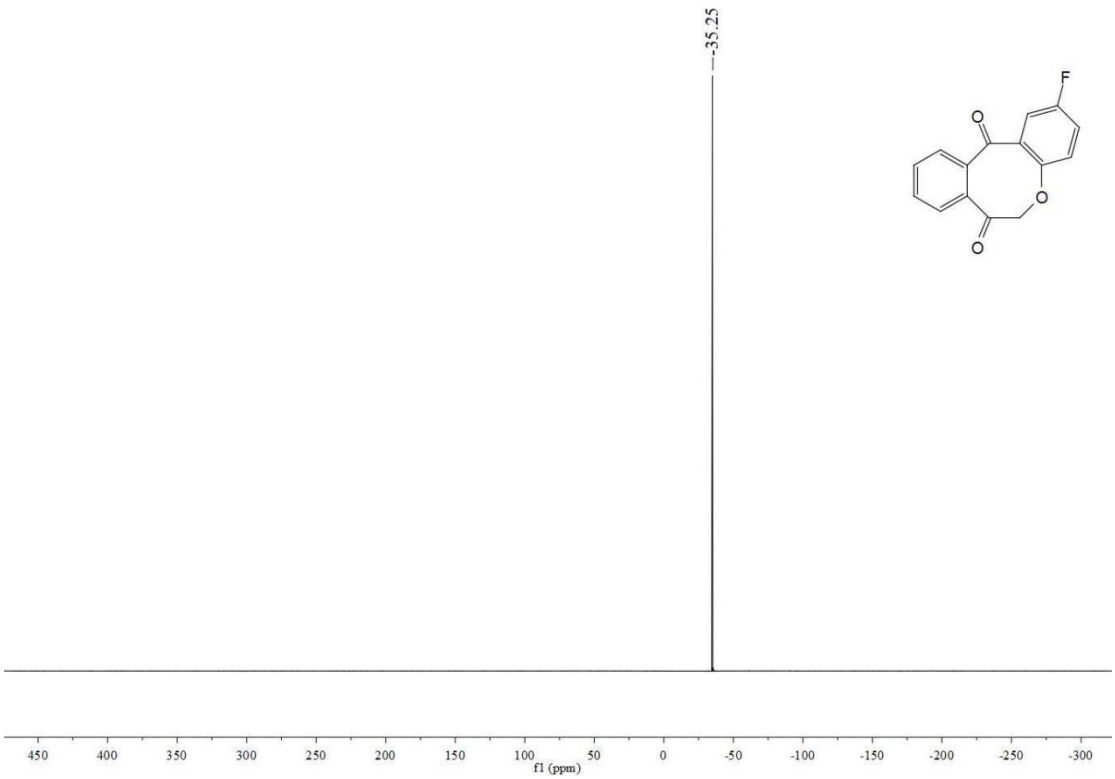


Figure S65. ^{19}F NMR of 2-fluoro-6H-dibenzo[b,e]oxocine-7,12-dione **(2d).**

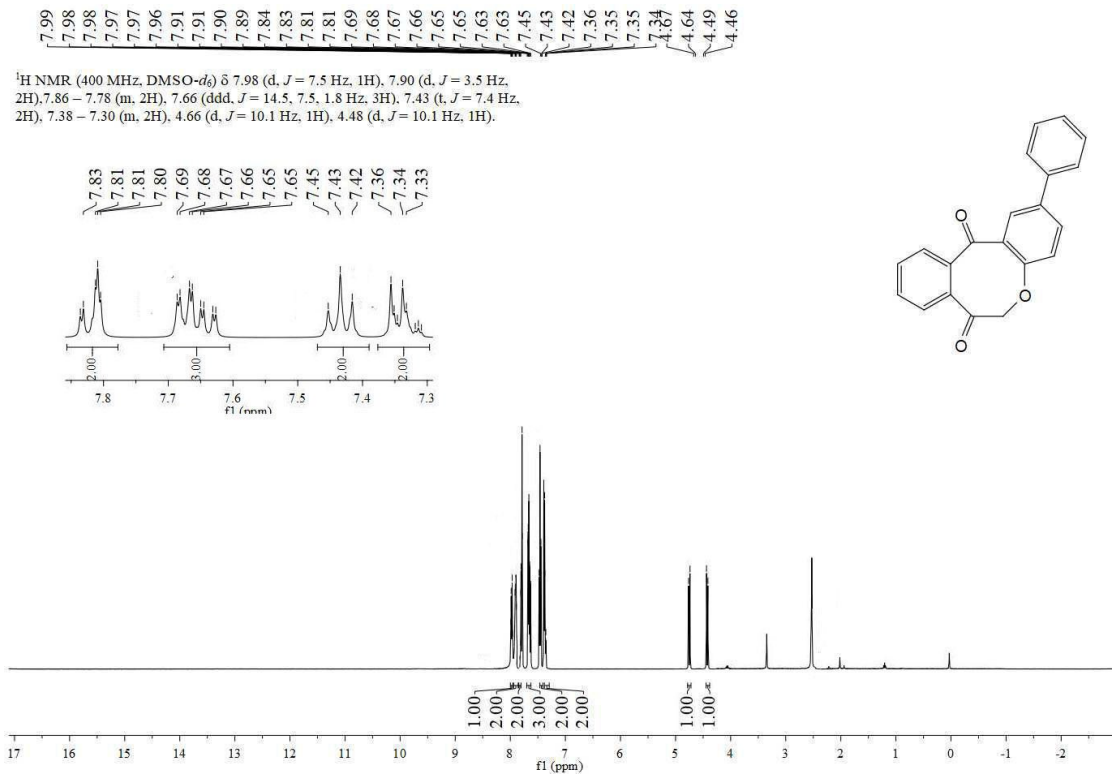


Figure S66. ^{1}H NMR of 2-phenyl-6H-dibenzo[b,e]oxocine-7,12-dione **(2e).**

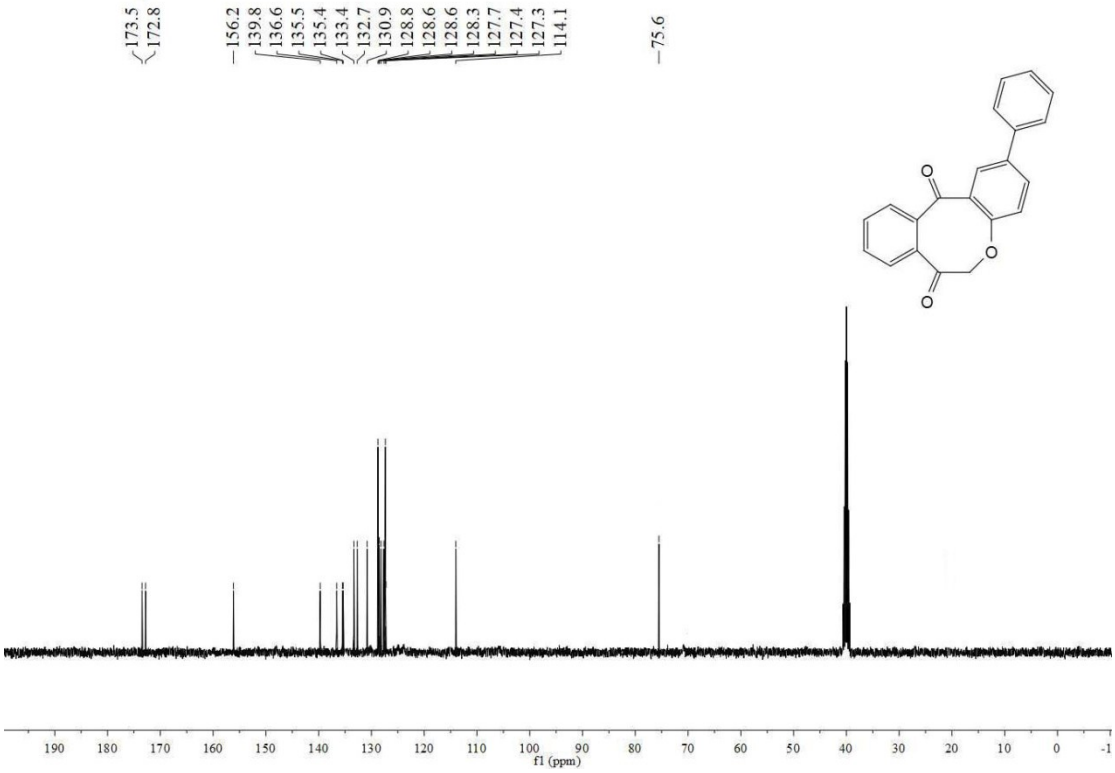


Figure S67. ^{13}C NMR of 2-phenyl-6H-dibenzo[b,e]oxocine-7,12-dione **(2e).**

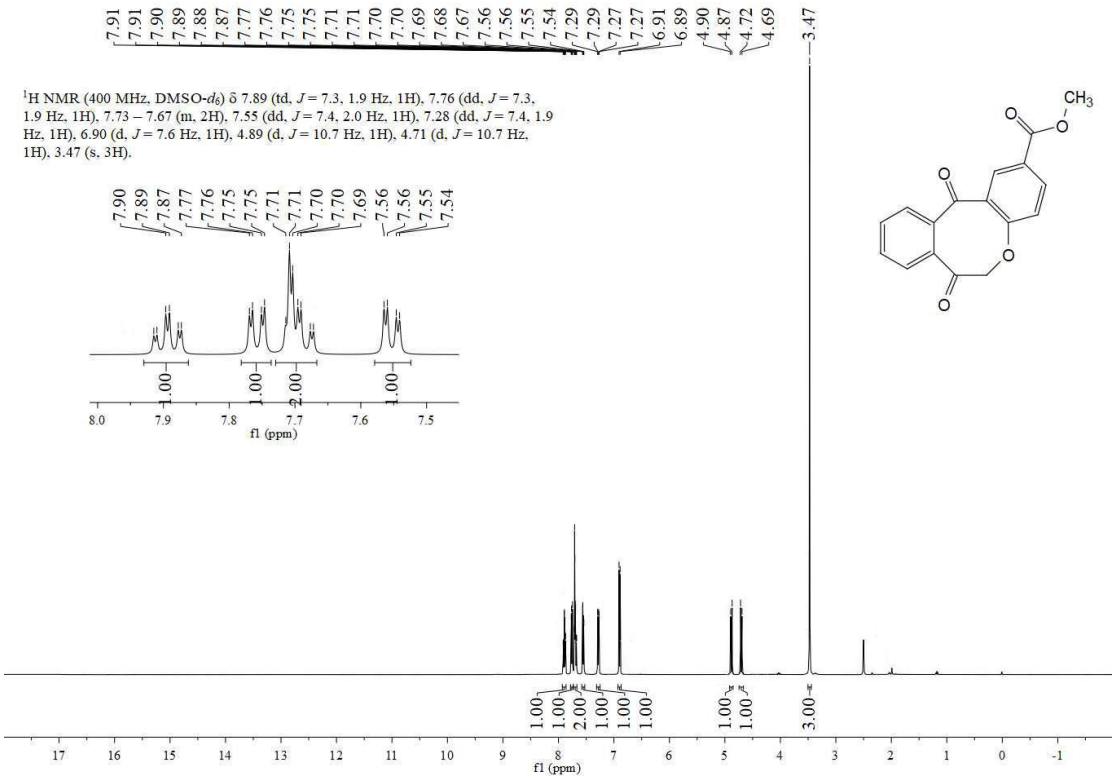


Figure S68. ^{1}H NMR of Methyl 7,12-dioxo-7,12-dihydro-6H-dibenzo[b,e]oxocine-2-carboxylate **(2f).**

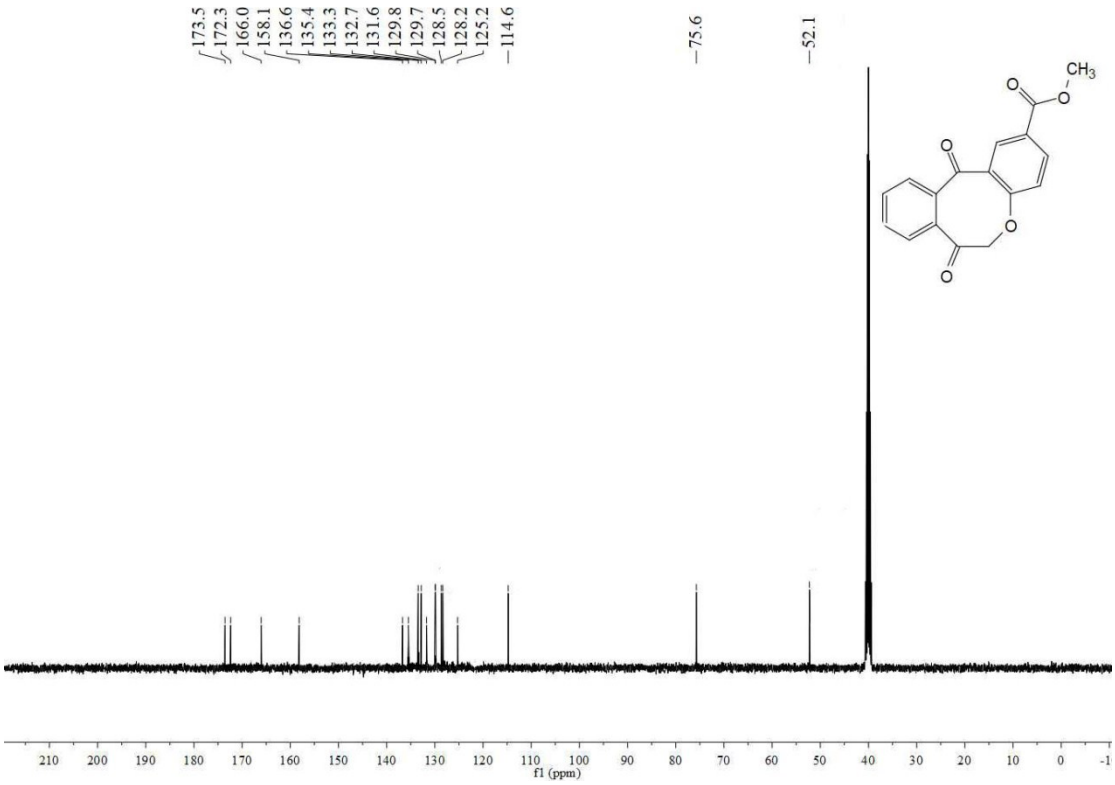


Figure S69. ^{13}C NMR of Methyl 7,12-dioxo-7,12-dihydro-6H-dibenzo[b,e]oxocine-2-carboxylate **(2f).**

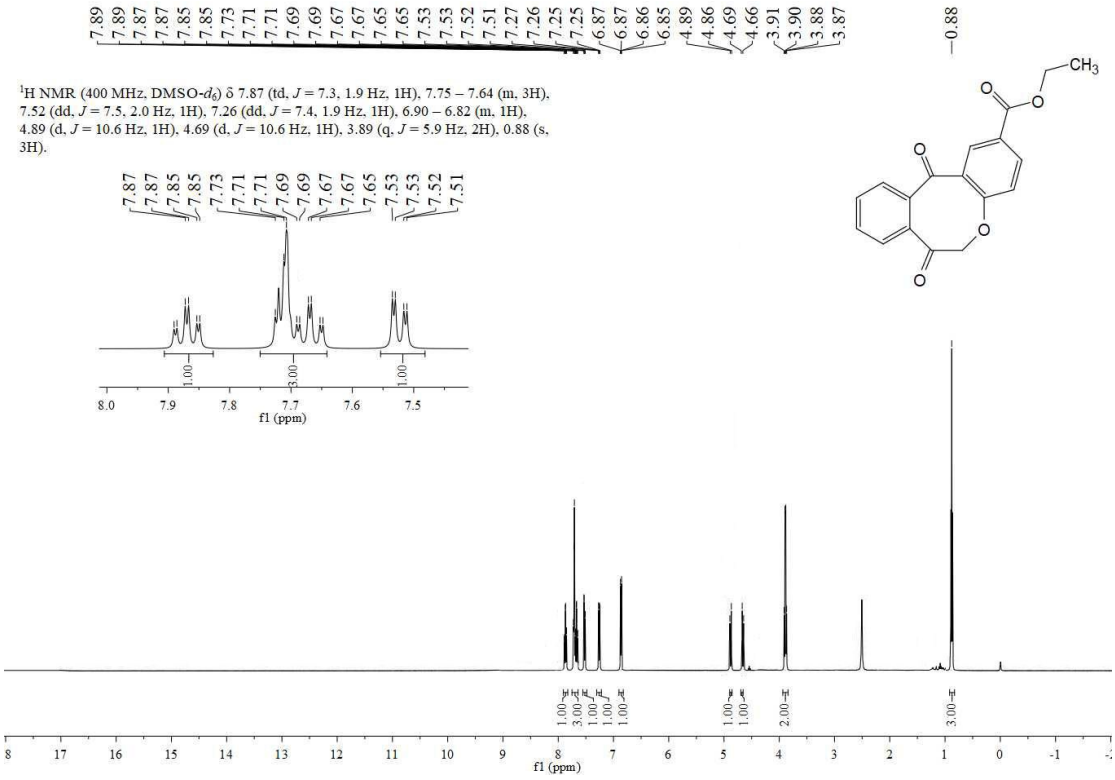


Figure S70. ^{1}H NMR of Ethyl 7,12-dioxo-7,12-dihydro-6H-dibenzo[b,e]oxocine-2-carboxylate **(2g).**

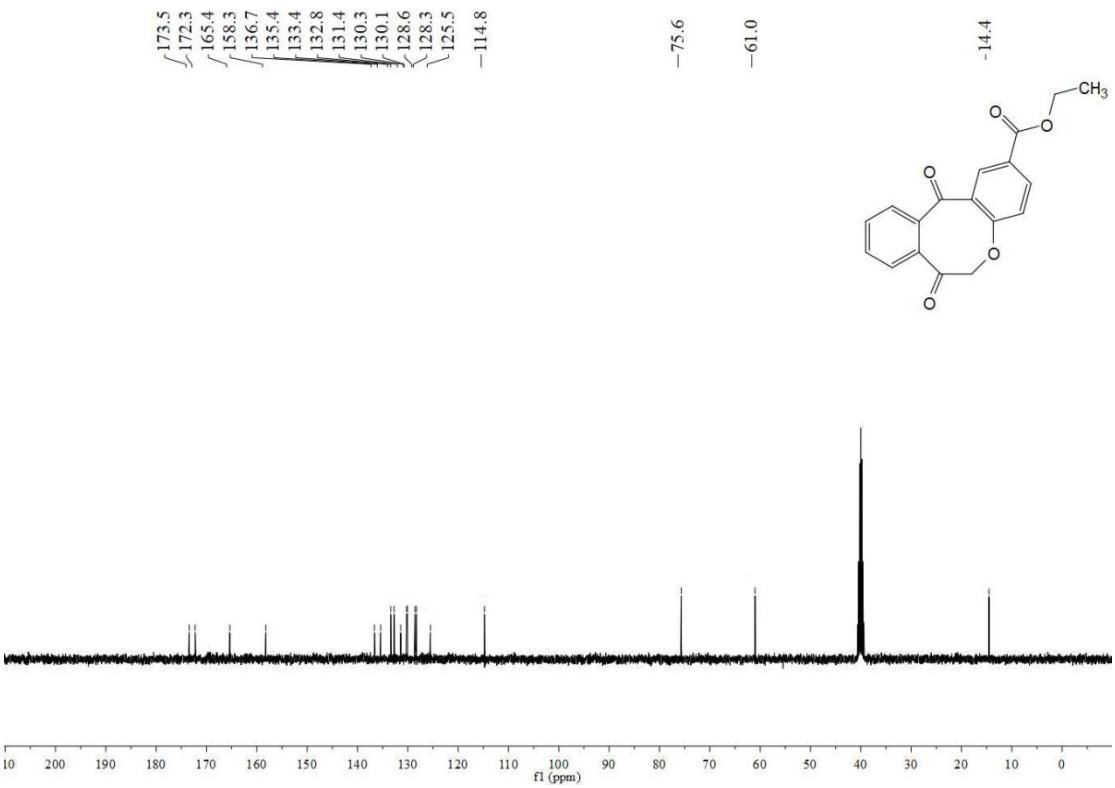


Figure S71. ^{13}C NMR of Ethyl 7,12-dioxo-7,12-dihydro-6H-dibenzo[b,e]oxocine-2-carboxylate **(2g).**

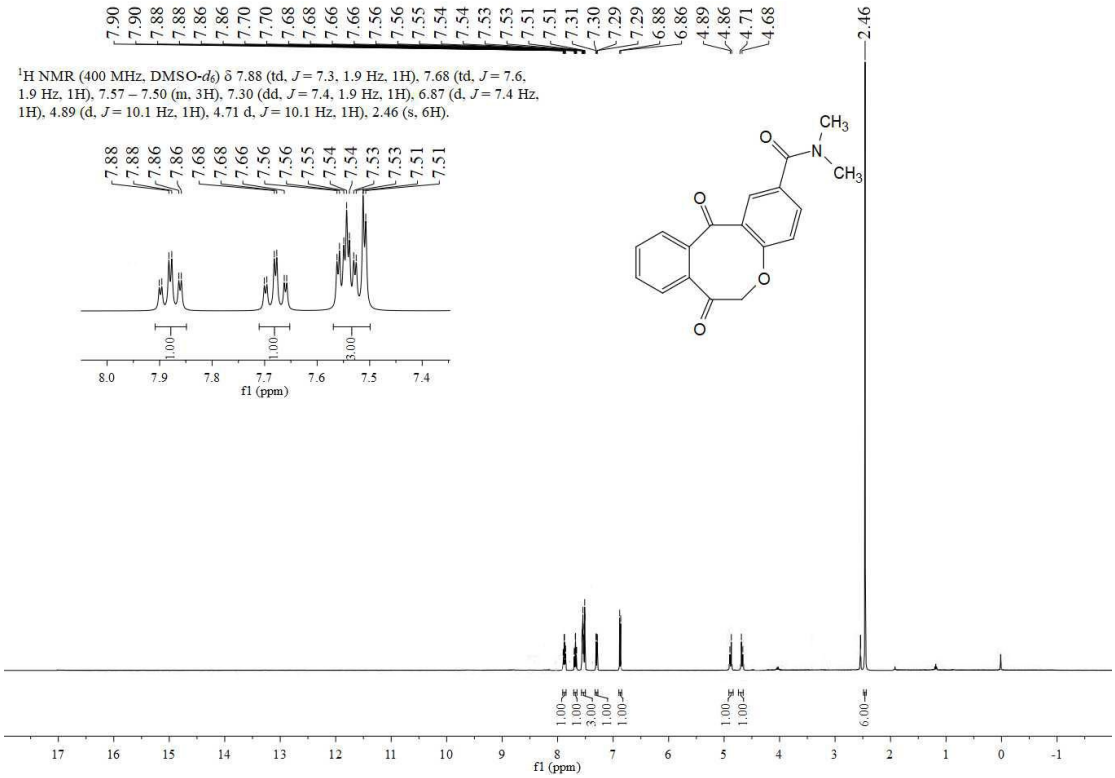


Figure S72. ^1H NMR of N,N-dimethyl-7,12-dioxo-7,12-dihydro-6H-dibenzo[b,e]oxocine-2-carboxamide **(2h).**

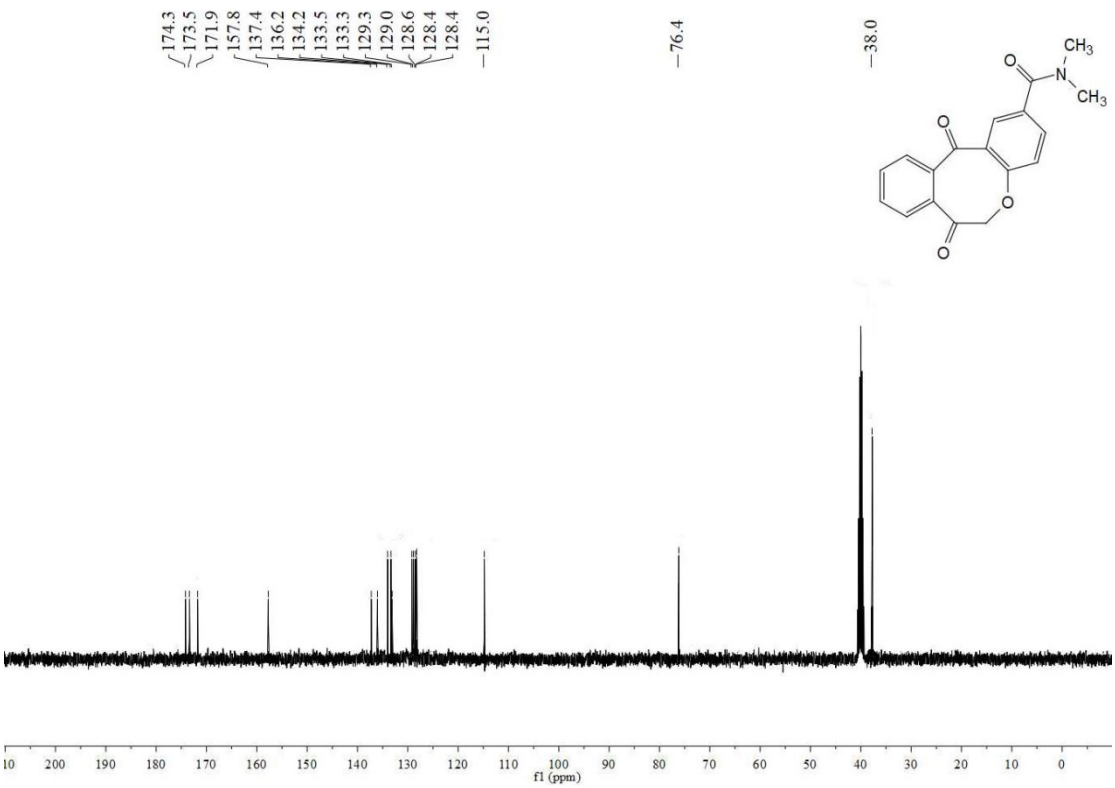


Figure S73. ^{13}C NMR of N,N-dimethyl-7,12-dioxo-7,12-dihydro-6H-dibenzo[b,e]oxocine-2-carboxamide **(2h).**

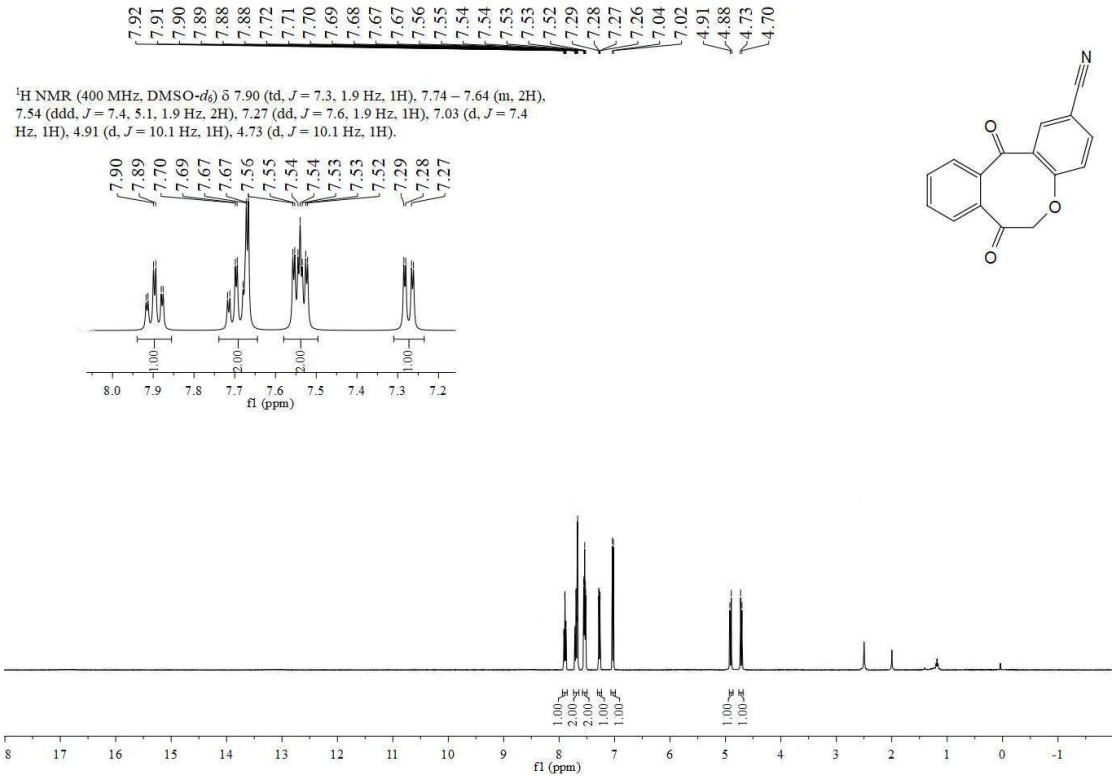


Figure S74. ^{1}H NMR of 7,12-dioxo-7,12-dihydro-6H-dibenzo[b,e]oxocine-2-carbonitrile **(2i).**

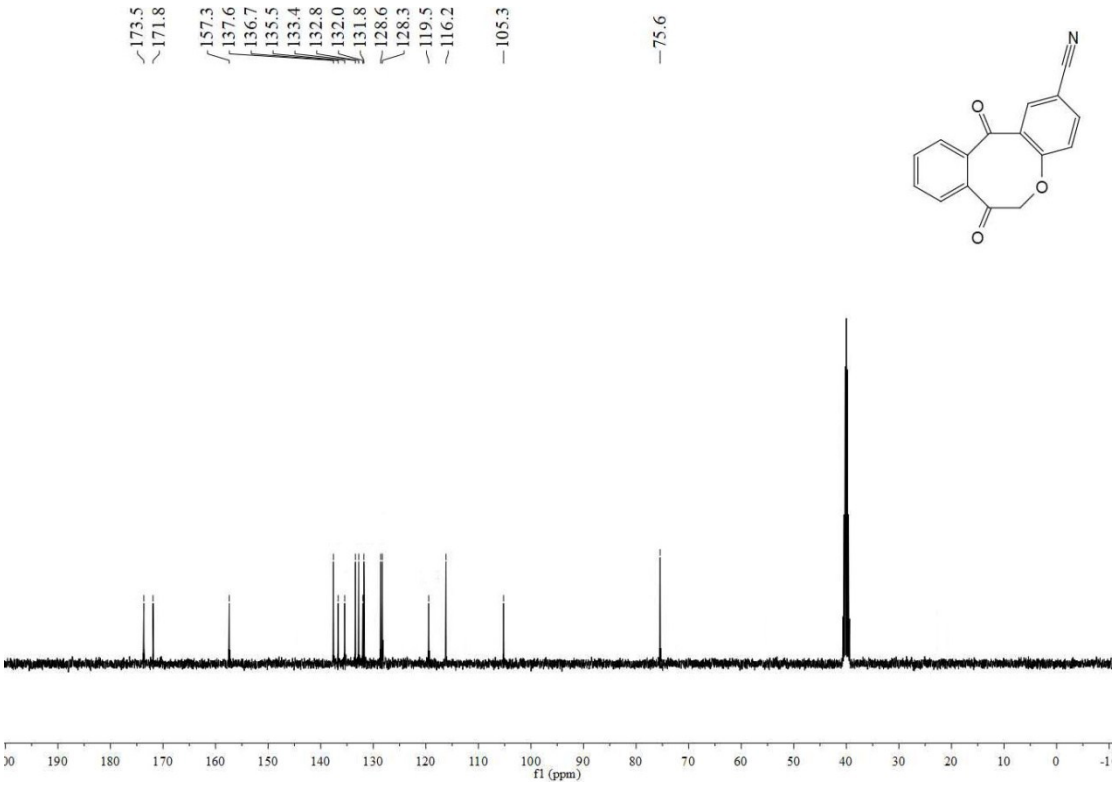


Figure S75. ^{13}C NMR of 7,12-dioxo-7,12-dihydro-6H-dibenzo[b,e]oxocine-2-carbonitrile **(2i).**

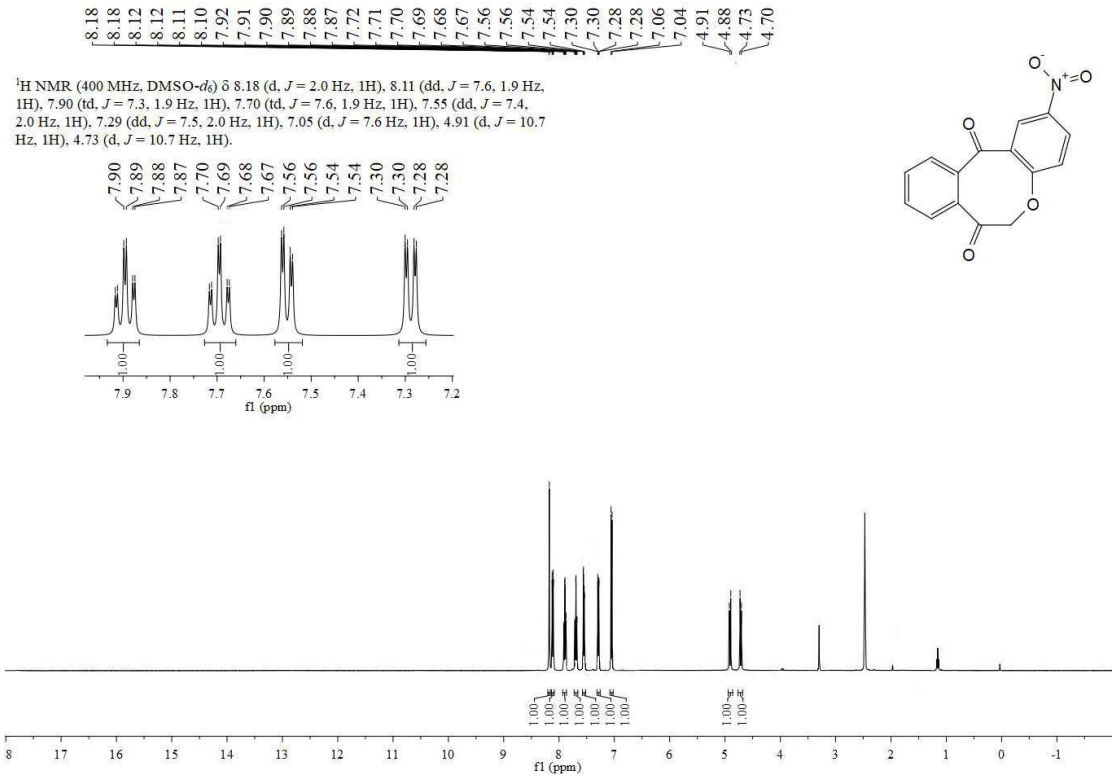


Figure S76. ^{1}H NMR of 2-nitro-6H-dibenzo[b,e]oxocine-7,12-dione **(2j).**

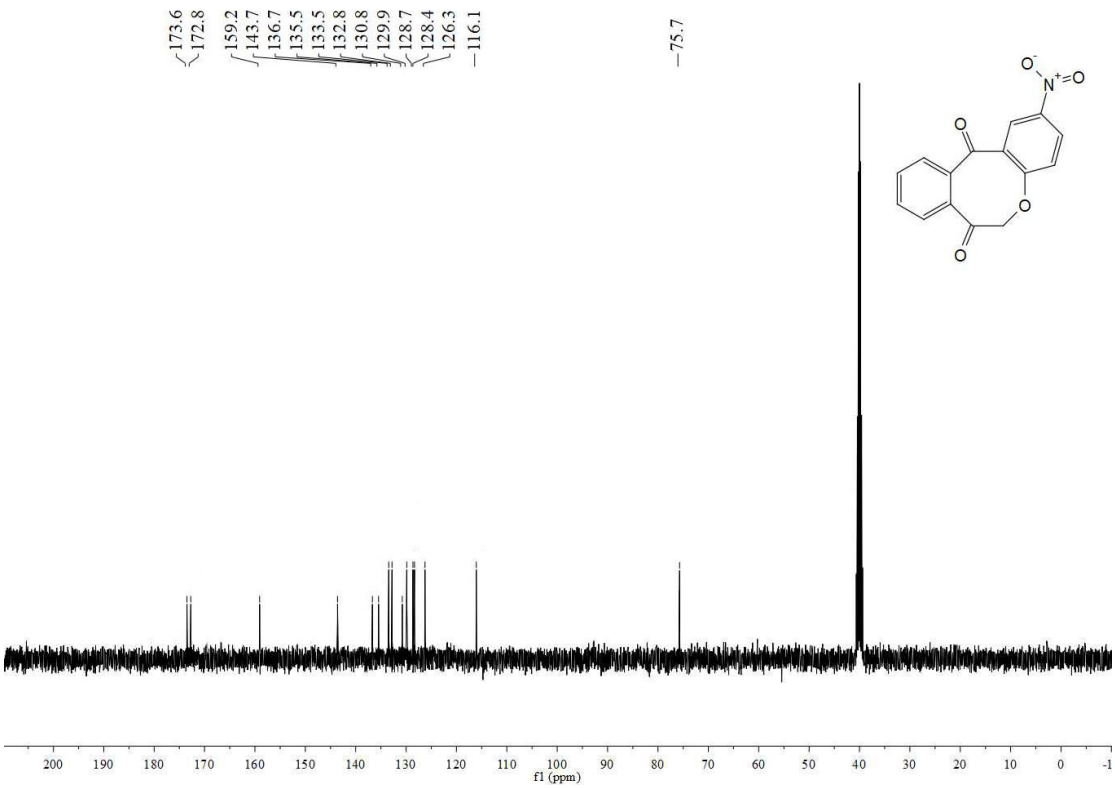
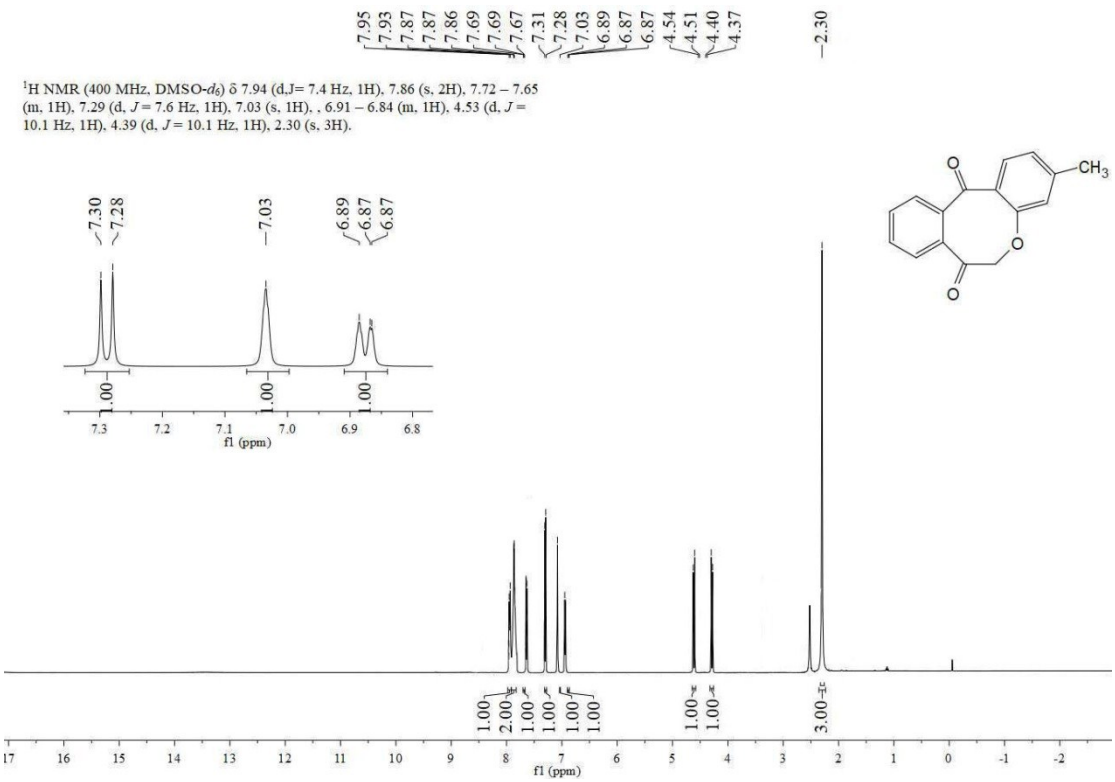


Figure S77. ^{13}C NMR of 2-nitro-6H-dibenzo[b,e]oxocine-7,12-dione **(2j).**



^{1}H NMR (400 MHz, DMSO-d_6) δ 7.94 (d,J= 7.4 Hz, 1H), 7.86 (s, 2H), 7.72 – 7.65 (m, 1H), 7.29 (d, J = 7.6 Hz, 1H), 7.03 (s, 1H), , 6.91 – 6.84 (m, 1H), 4.53 (d, J = 10.1 Hz, 1H), 4.39 (d, J = 10.1 Hz, 1H), 2.30 (s, 3H).

Figure S78. ^{1}H NMR of 3-methyl-6H-dibenzo[b,e]oxocine-7,12-dione **(2k).**

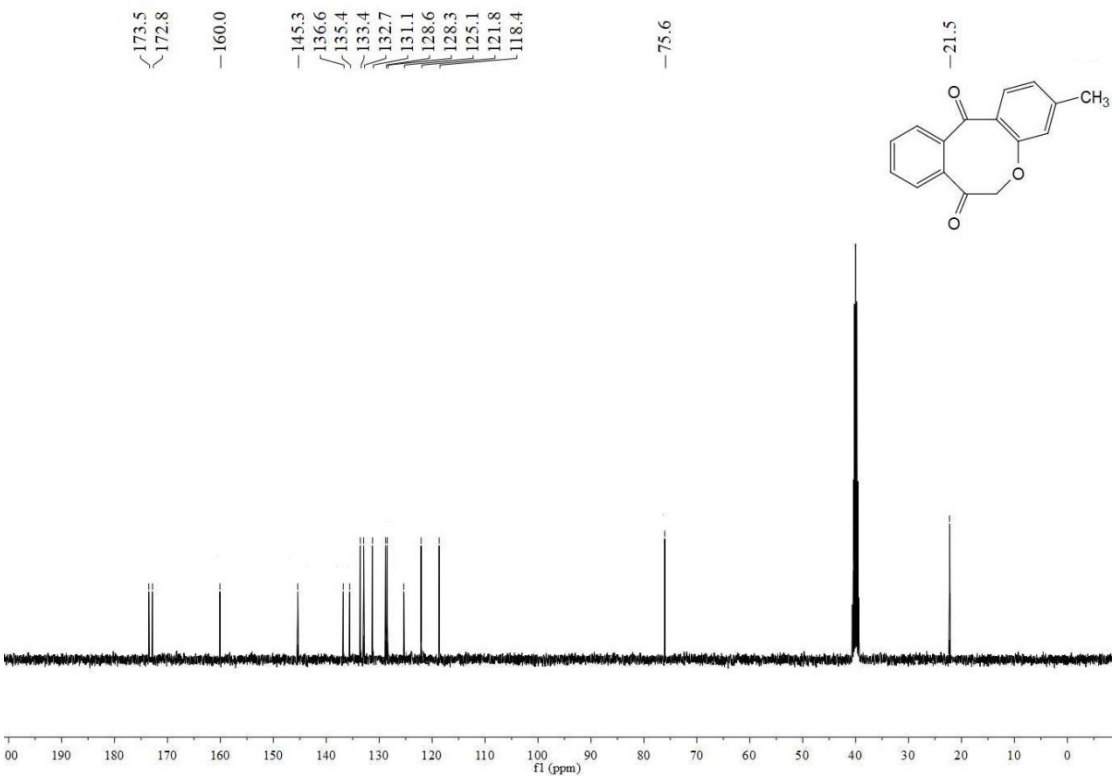
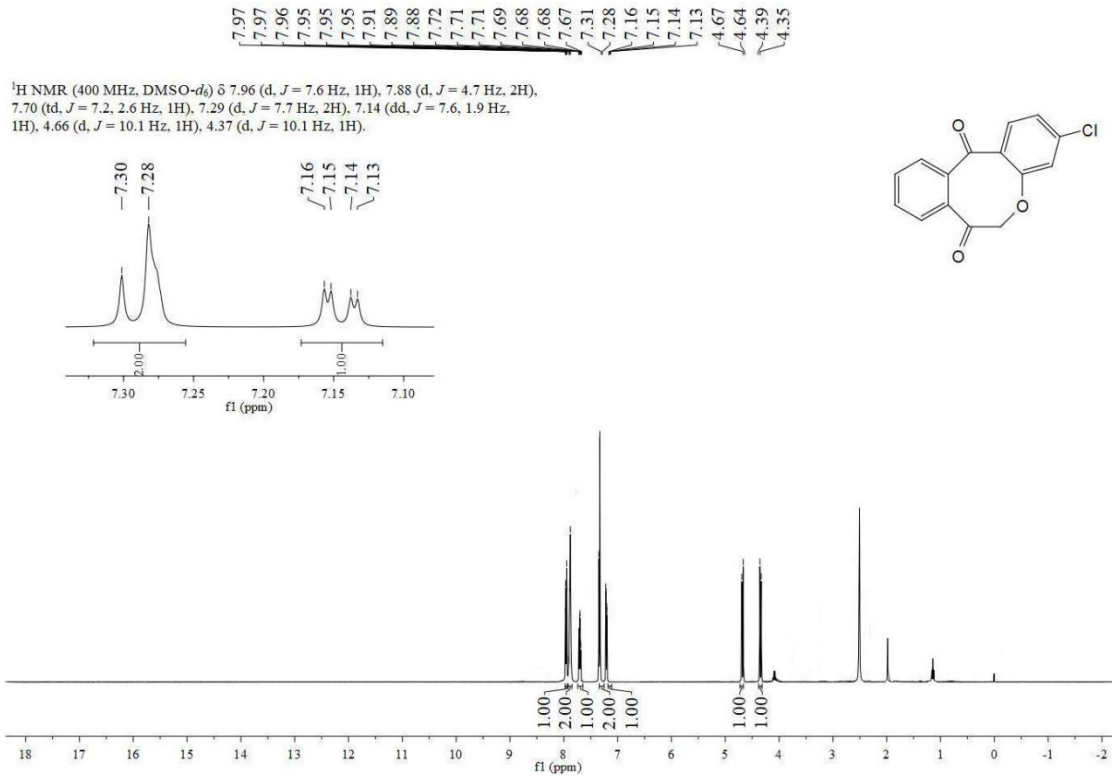


Figure S79. ^{13}C NMR of 3-methyl-6H-dibenzo[b,e]oxocine-7,12-dione **(2k).**



^1H NMR (400 MHz, DMSO-d_6) δ 7.96 (d, J = 7.6 Hz, 1H), 7.88 (d, J = 4.7 Hz, 2H), 7.70 (td, J = 7.2, 2.6 Hz, 1H), 7.29 (d, J = 7.7 Hz, 2H), 7.14 (dd, J = 7.6, 1.9 Hz, 1H), 4.66 (d, J = 10.1 Hz, 1H), 4.37 (d, J = 10.1 Hz, 1H).

Figure S80. ^1H NMR of 3-chloro-6H-dibenzo[b,e]oxocine-7,12-dione **(2l).**

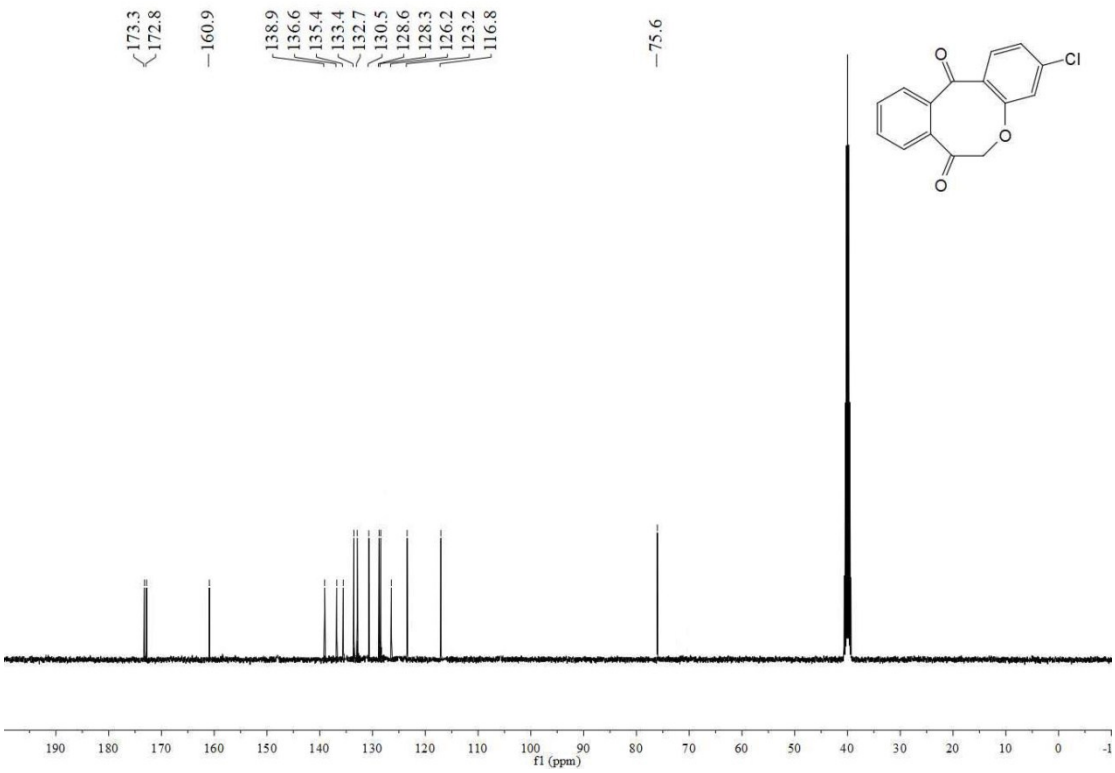


Figure S81. ^{13}C NMR of 3-chloro-6H-dibenzo[b,e]oxocine-7,12-dione **(2l).**

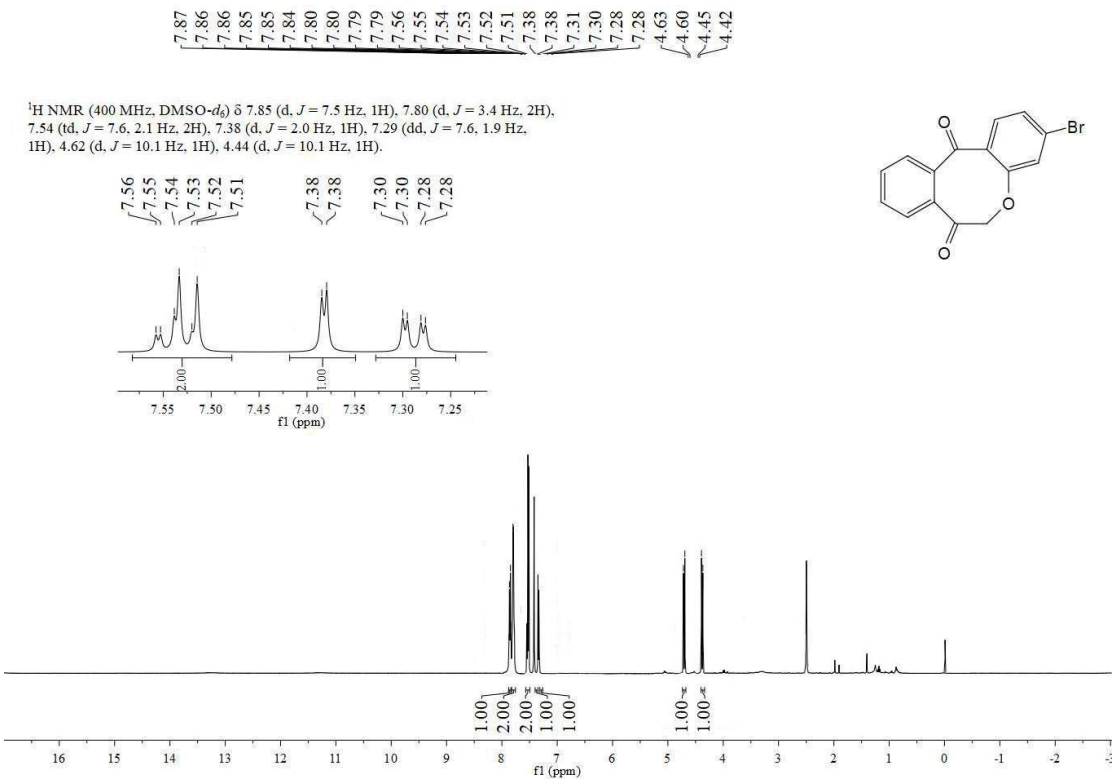


Figure S82. ^{1}H NMR of 3-bromo-6H-dibenzo[b,e]oxocine-7,12-dione **(2m).**

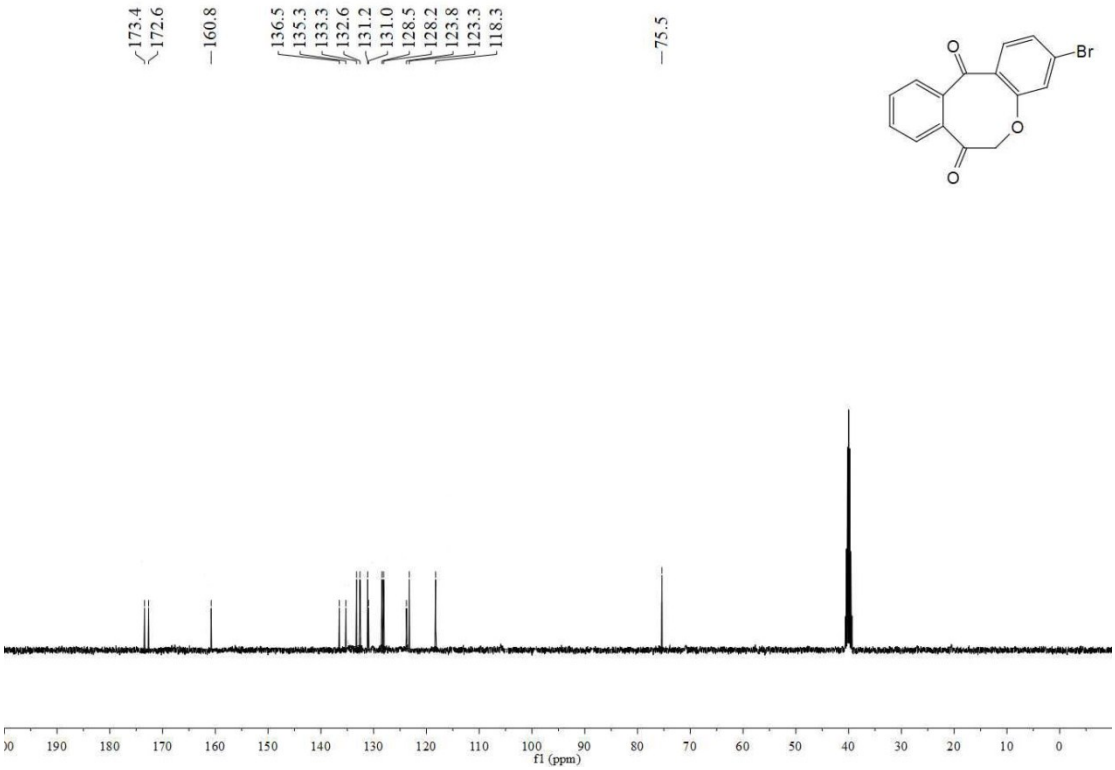


Figure S83. ^{13}C NMR of 3-bromo-6H-dibenzo[b,e]oxocine-7,12-dione **(2m).**

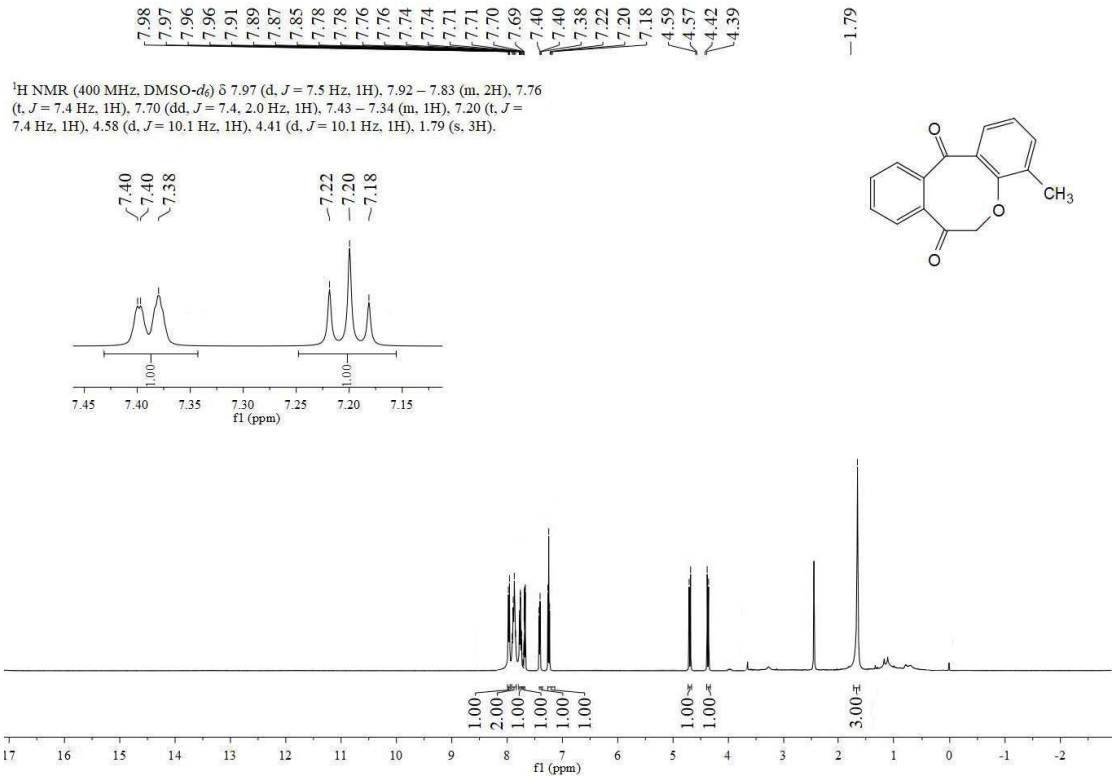


Figure S84. ^1H NMR of 4-methyl-6H-dibenzo[b,e]oxocine-7,12-dione **(2n).**

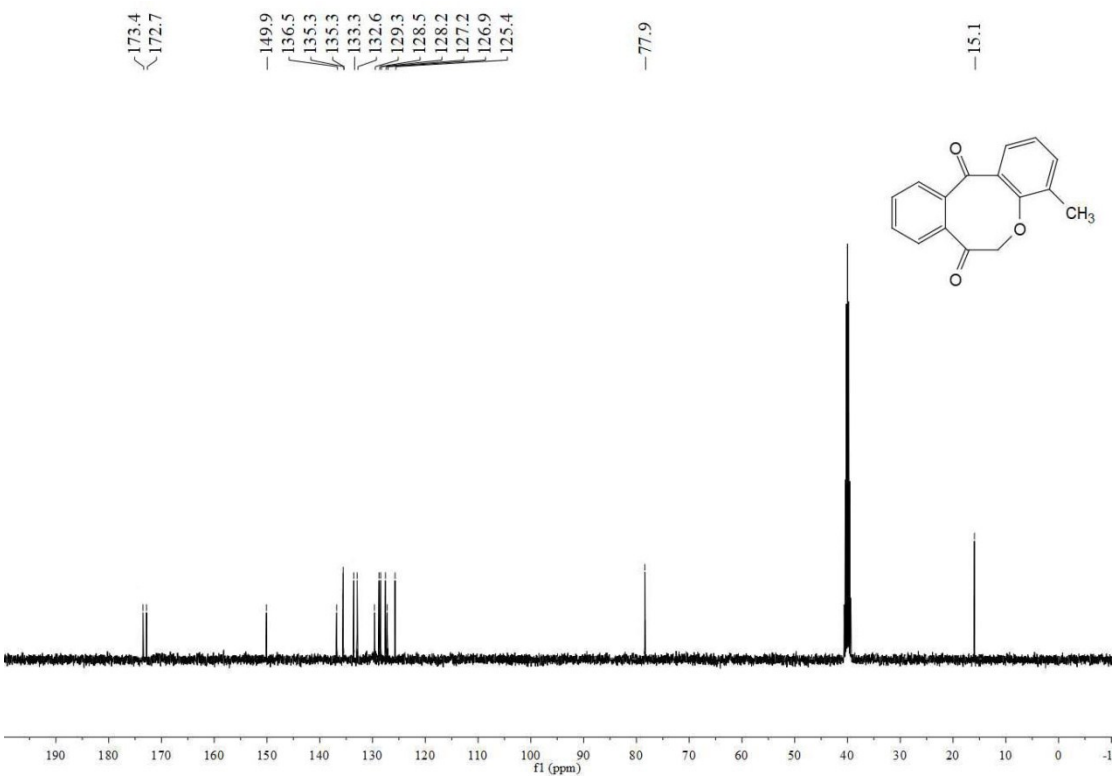


Figure S85. ^{13}C NMR of 4-methyl-6H-dibenzo[b,e]oxocine-7,12-dione **(2n).**

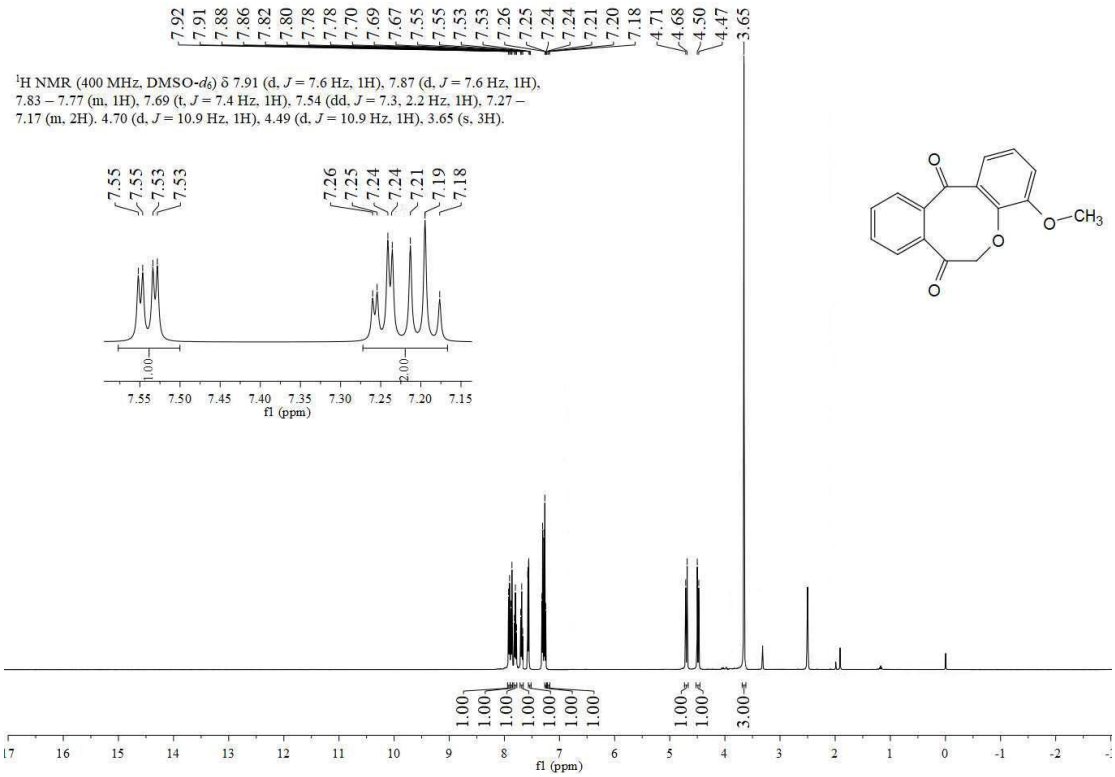


Figure S86. ^{1}H NMR of 4-methoxy-6H-dibenzo[b,e]oxocine-7,12-dione **(2o).**

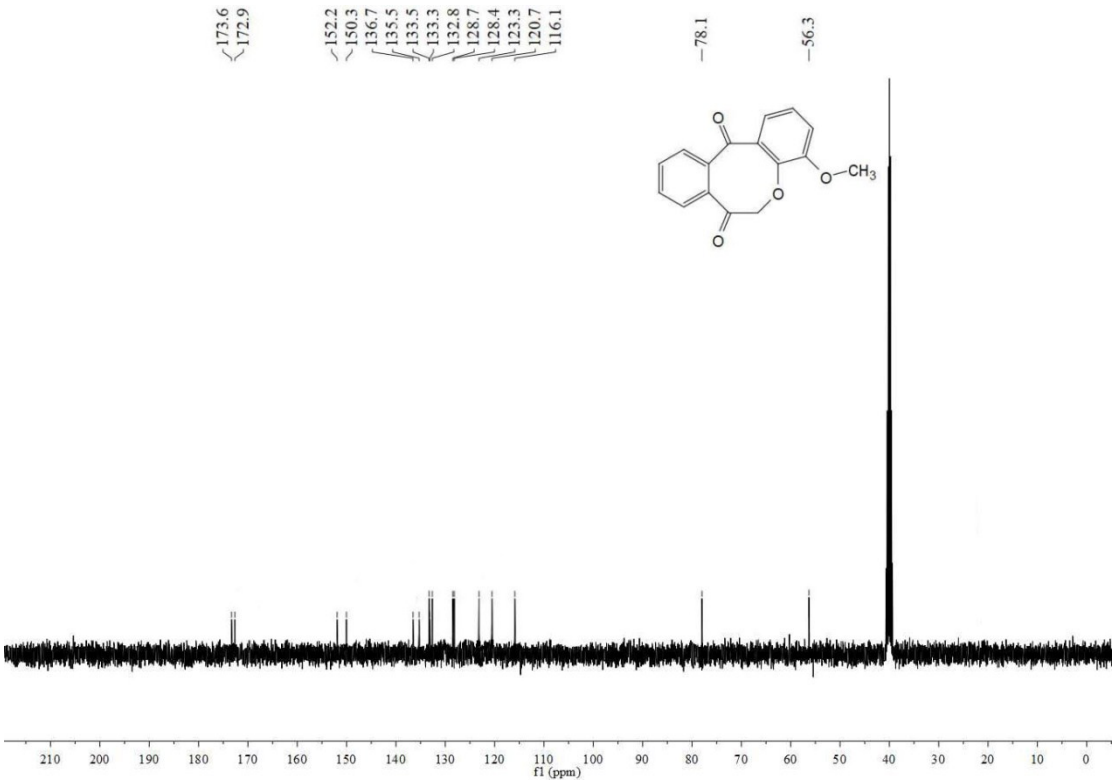


Figure S87. ^{13}C NMR of 4-methoxy-6H-dibenzo[b,e]oxocine-7,12-dione **(2o).**

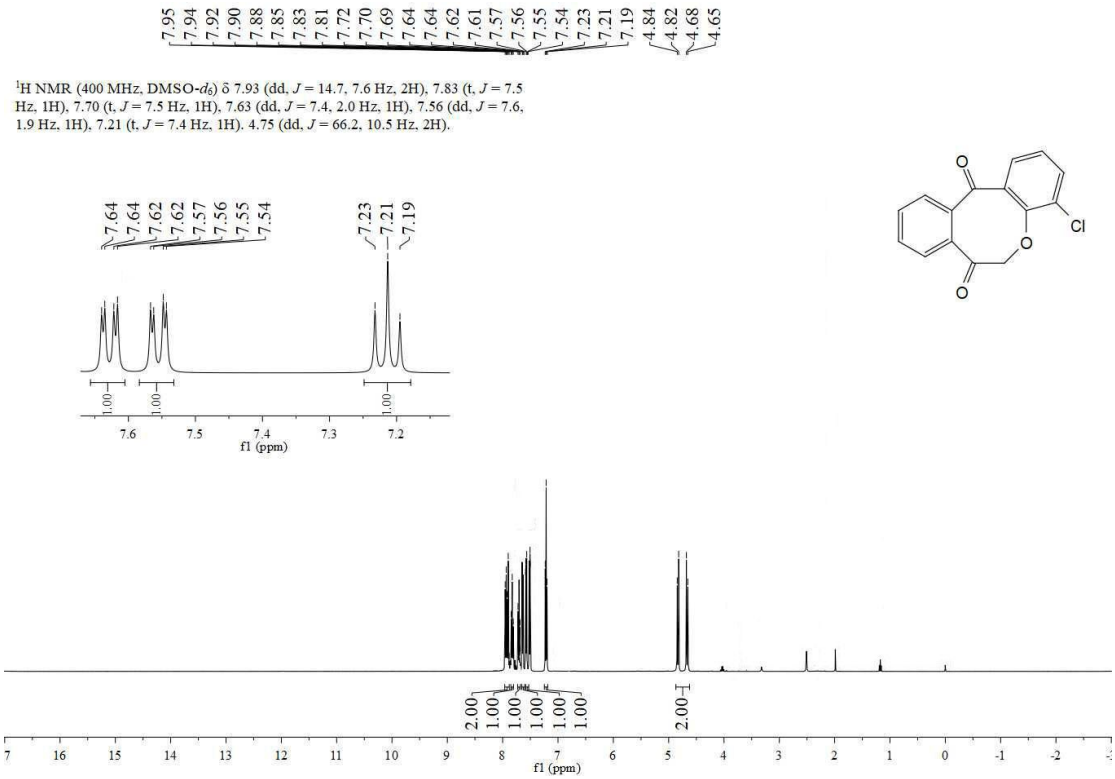


Figure S88. ^{1}H NMR of 4-chloro-6H-dibenzo[b,e]oxocine-7,12-dione **(2p).**

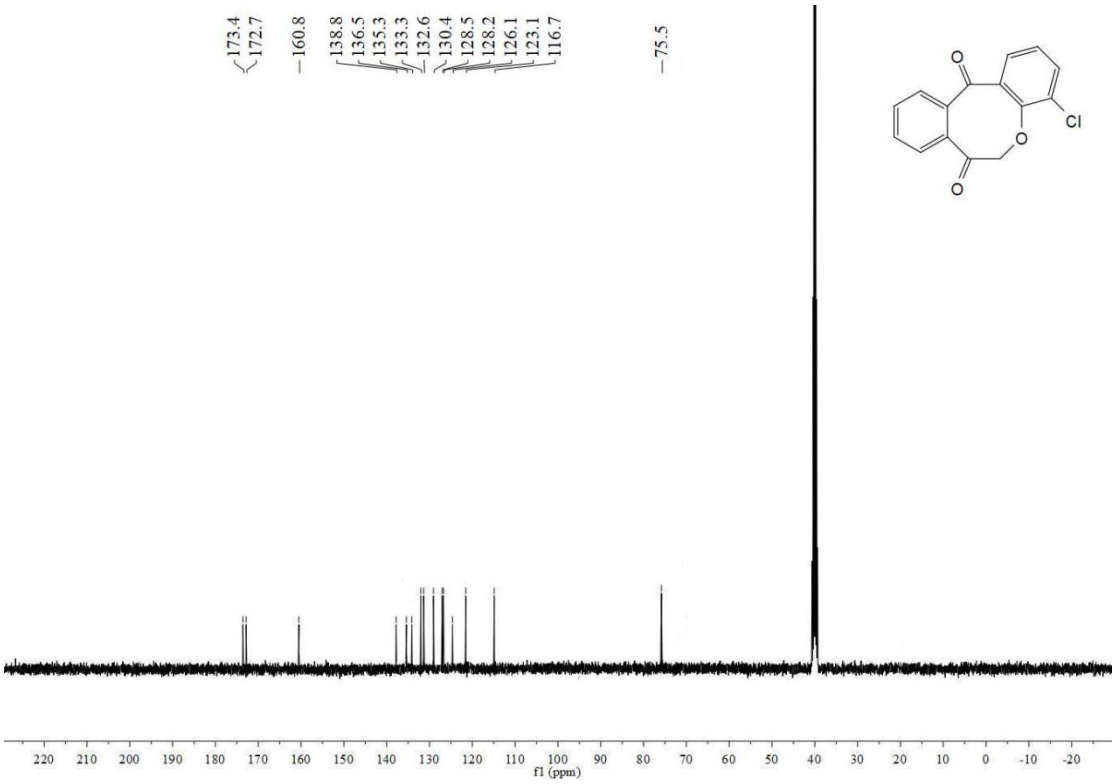


Figure S89. ^{13}C NMR of 4-chloro-6H-dibenzo[b,e]oxocine-7,12-dione **(2p).**

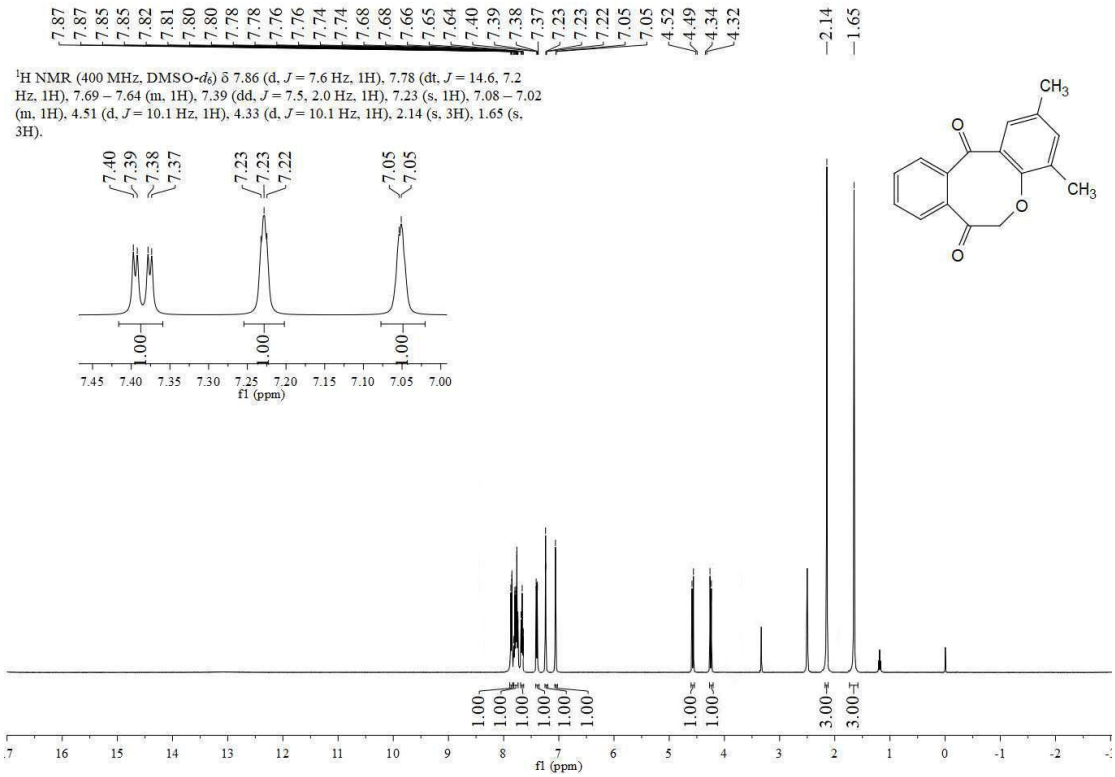


Figure S90. ^1H NMR of 2,4-dimethyl-6H-dibenzo[b,e]oxocine-7,12-dione **(2q).**

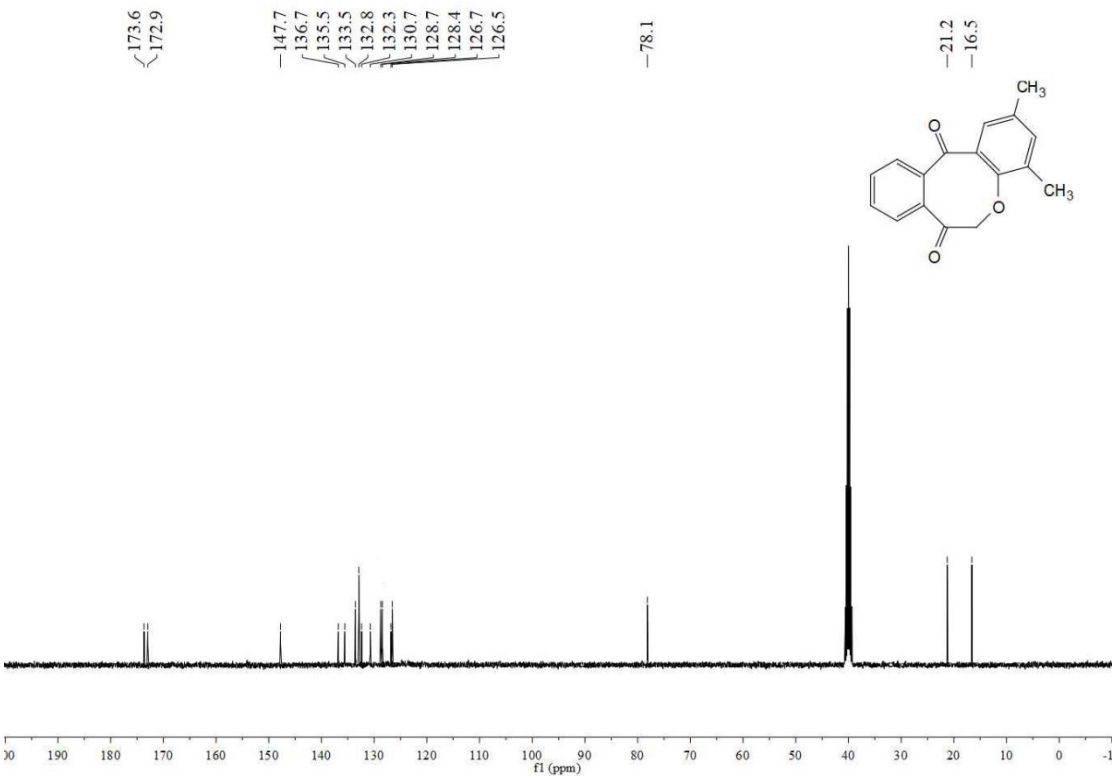


Figure S91. ^{13}C NMR of 2,4-dimethyl-6H-dibenzo[b,e]oxocine-7,12-dione **(2q).**

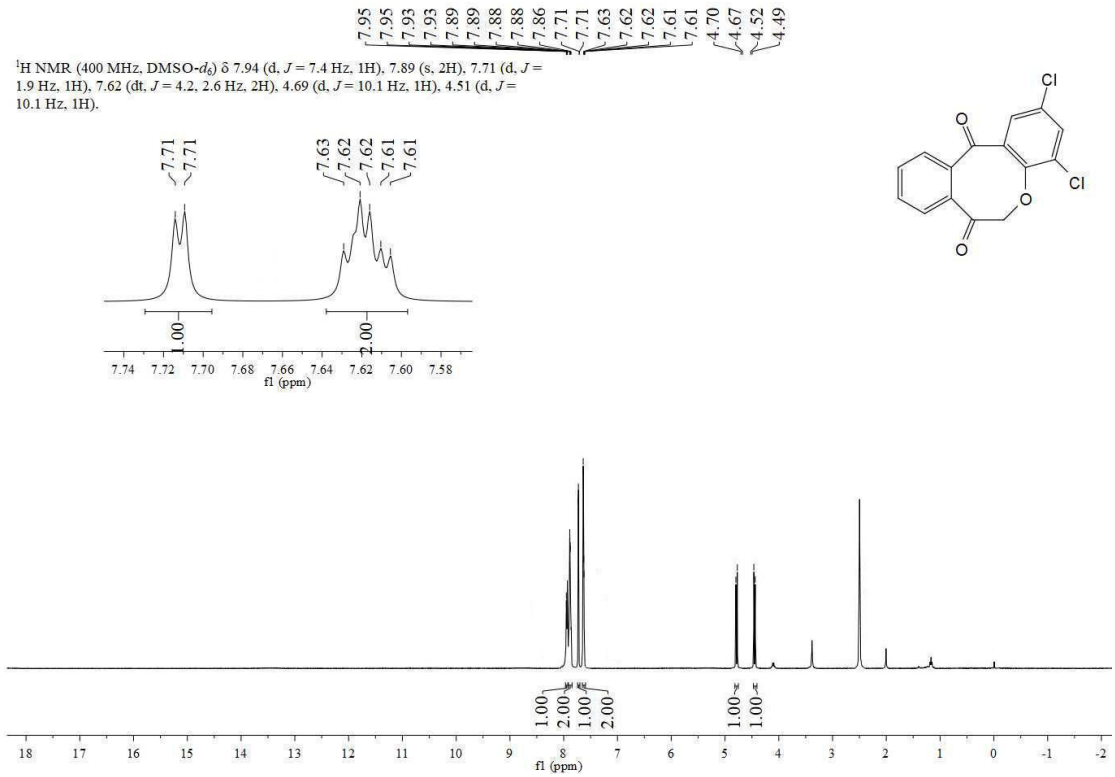


Figure S92. ^1H NMR of 2,4-dichloro-6H-dibenzo[b,e]oxocine-7,12-dione **(2r).**

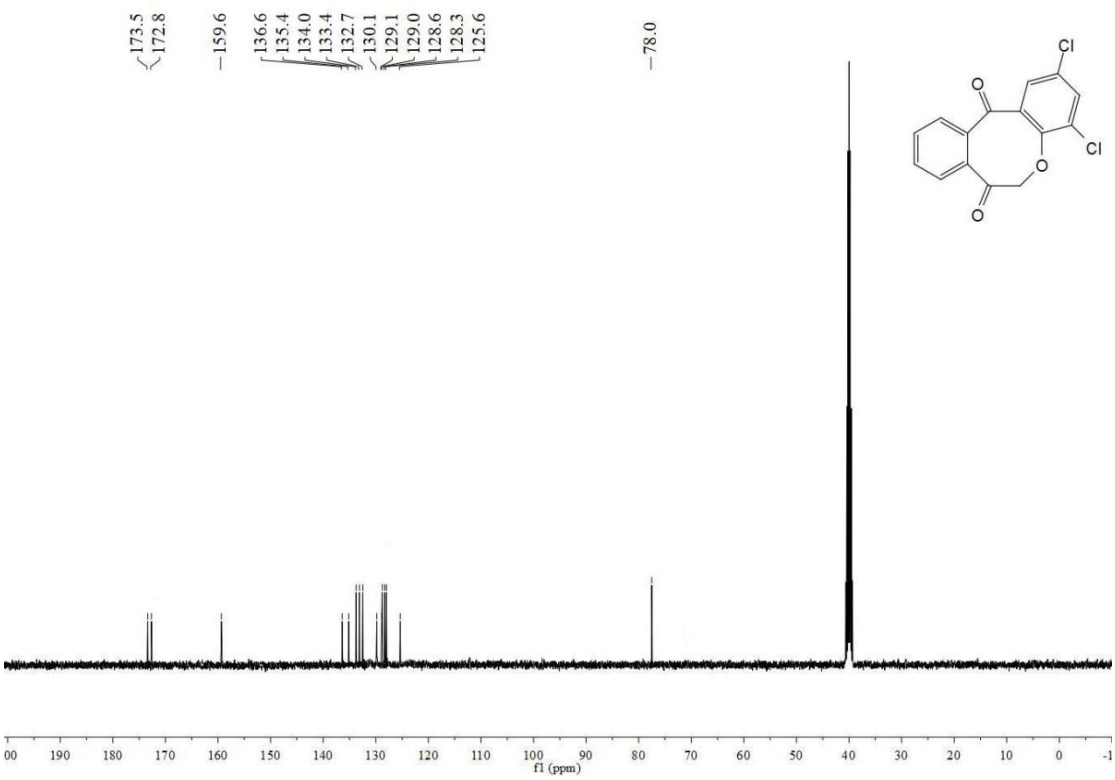


Figure S93. ^{13}C NMR of 2,4-dichloro-6H-dibenzo[b,e]oxocine-7,12-dione **(2r).**

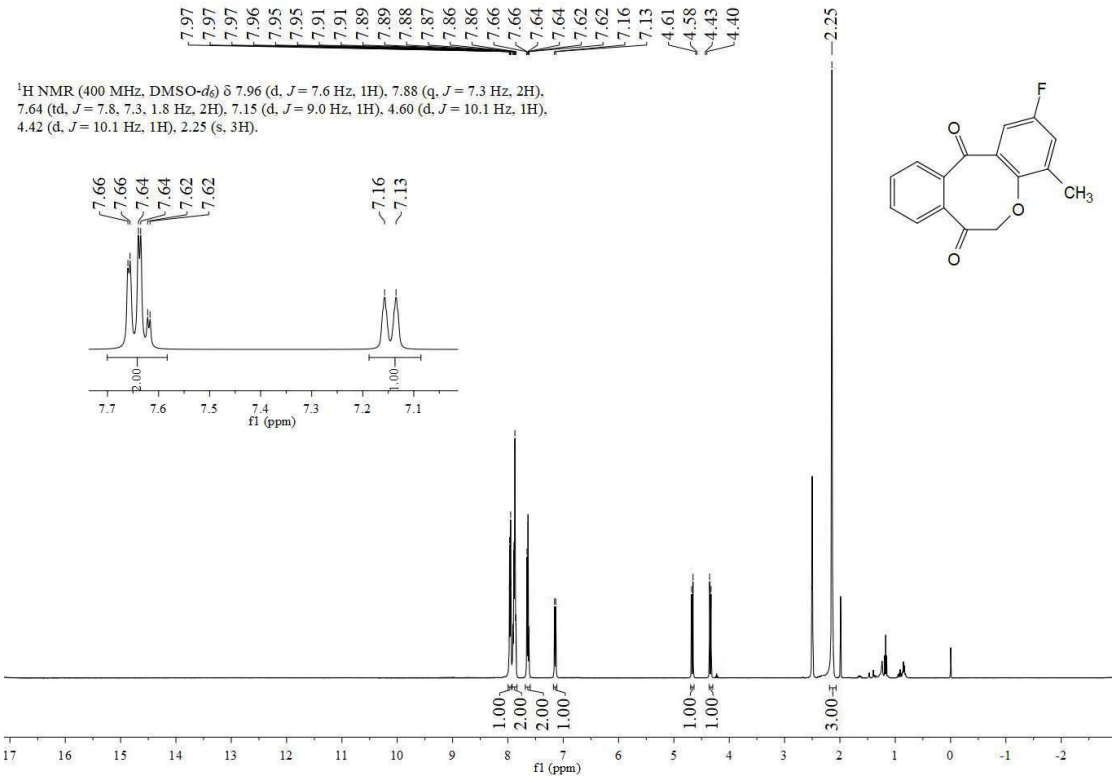


Figure S94. ^{1}H NMR of 2-fluoro-4-methyl-6H-dibenzo[b,e]oxocine-7,12-dione **(2s).**

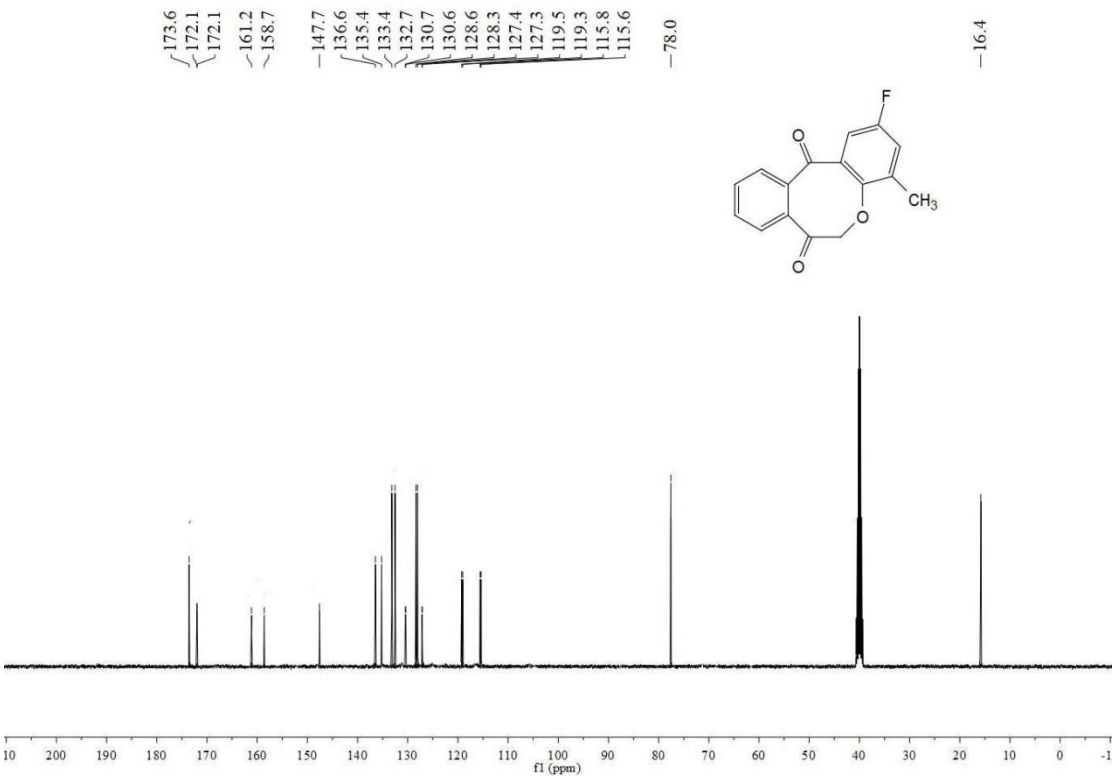


Figure S95. ^{13}C NMR of 2-fluoro-4-methyl-6H-dibenzo[b,e]oxocine-7,12-dione **(2s).**

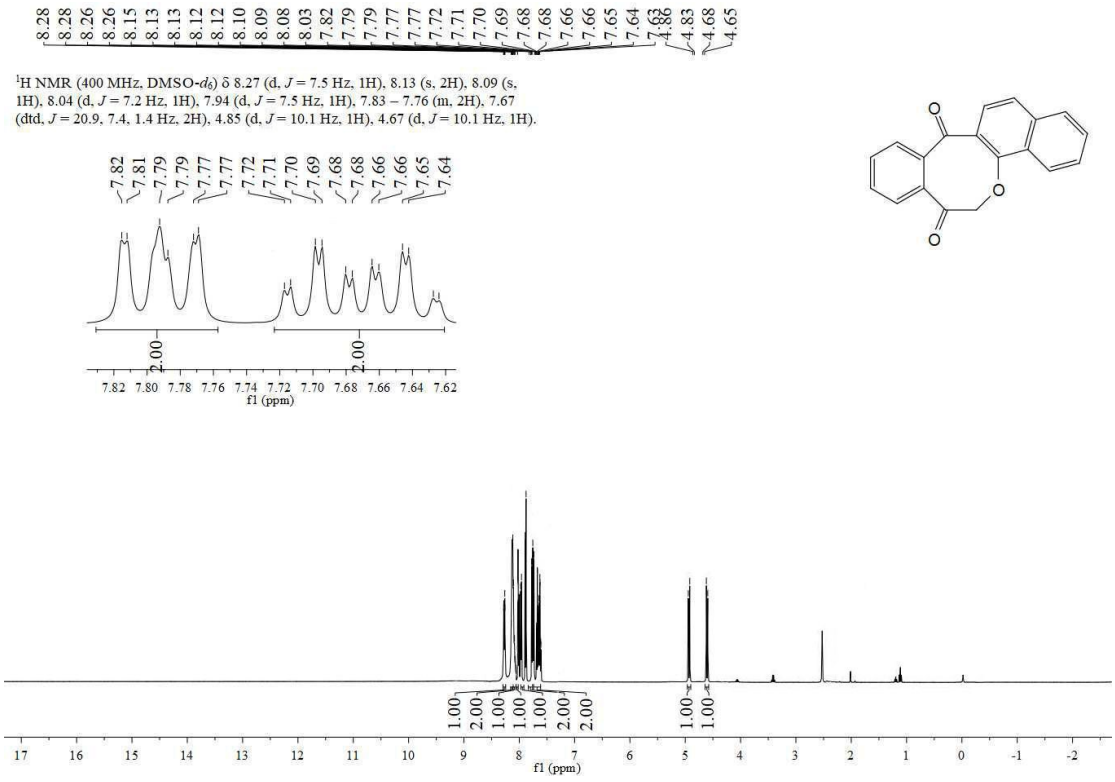


Figure S96. ^{1}H NMR of 8H-benzo[e]naphtho[1,2-b]oxocine-9,14-dione **(2t).**

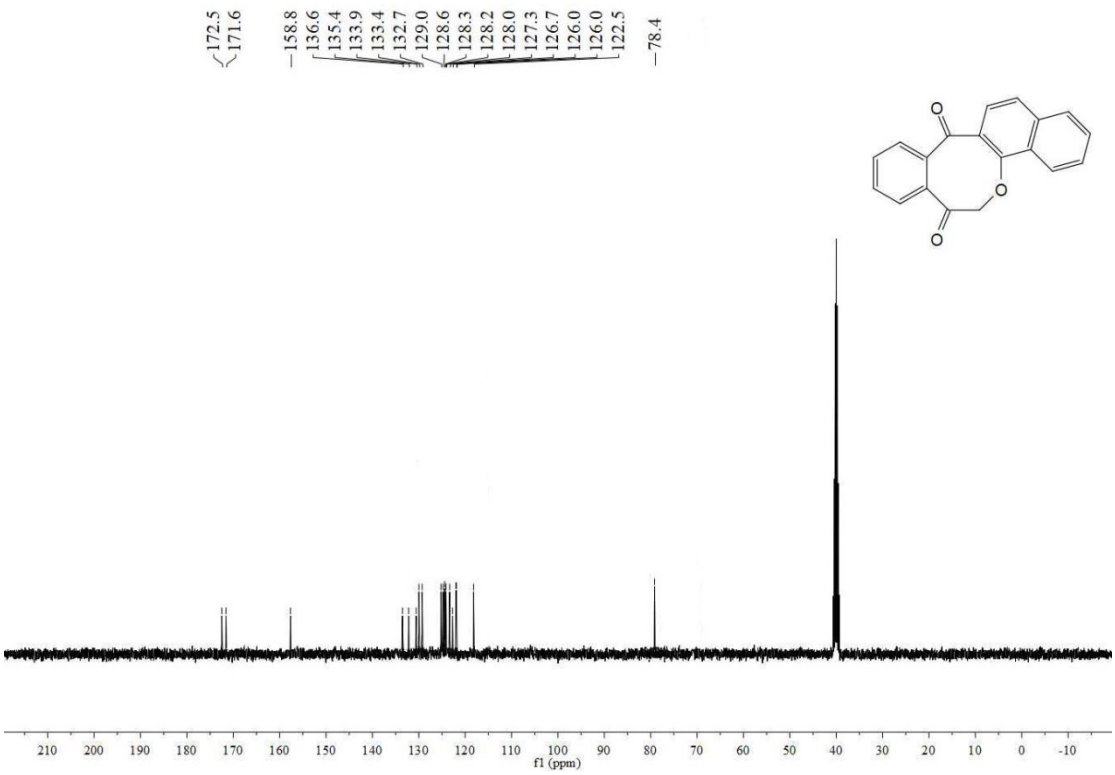


Figure S97. ^{13}C NMR of 8H-benzo[e]naphtho[1,2-b]oxocine-9,14-dione **(2t).**

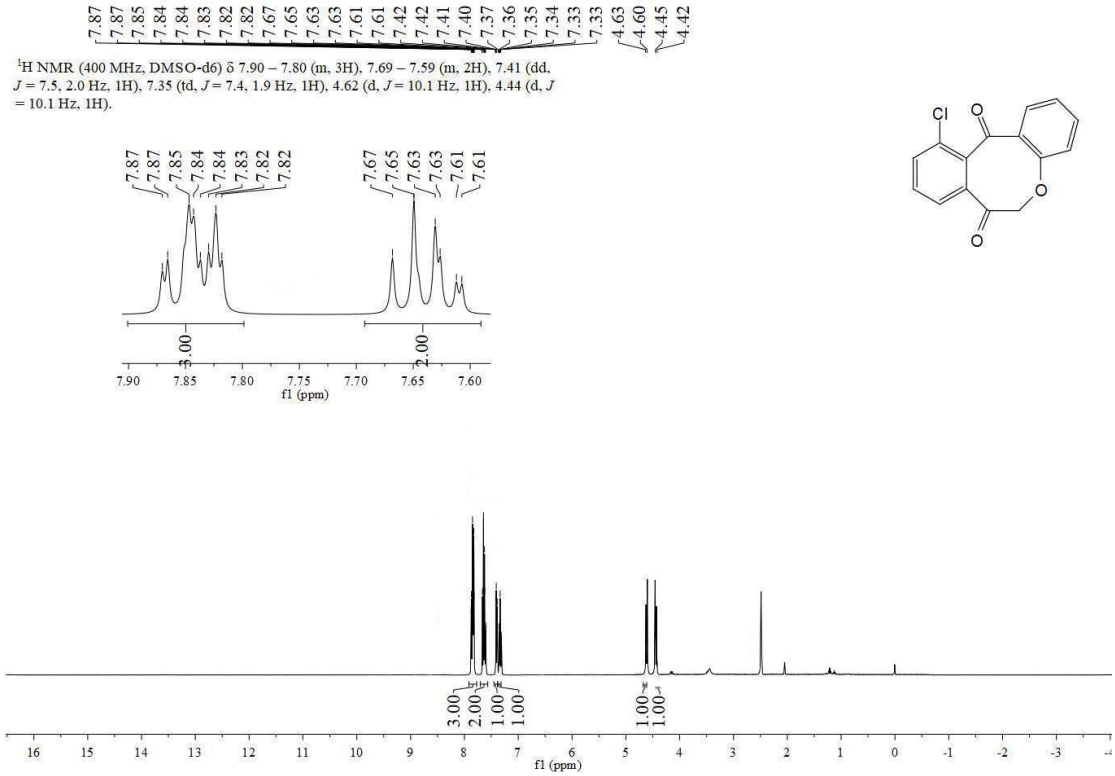


Figure S98. ^{1}H NMR of 11-chloro-6H-dibenzo[b,e]oxocine-7,12-dione **(2u).**

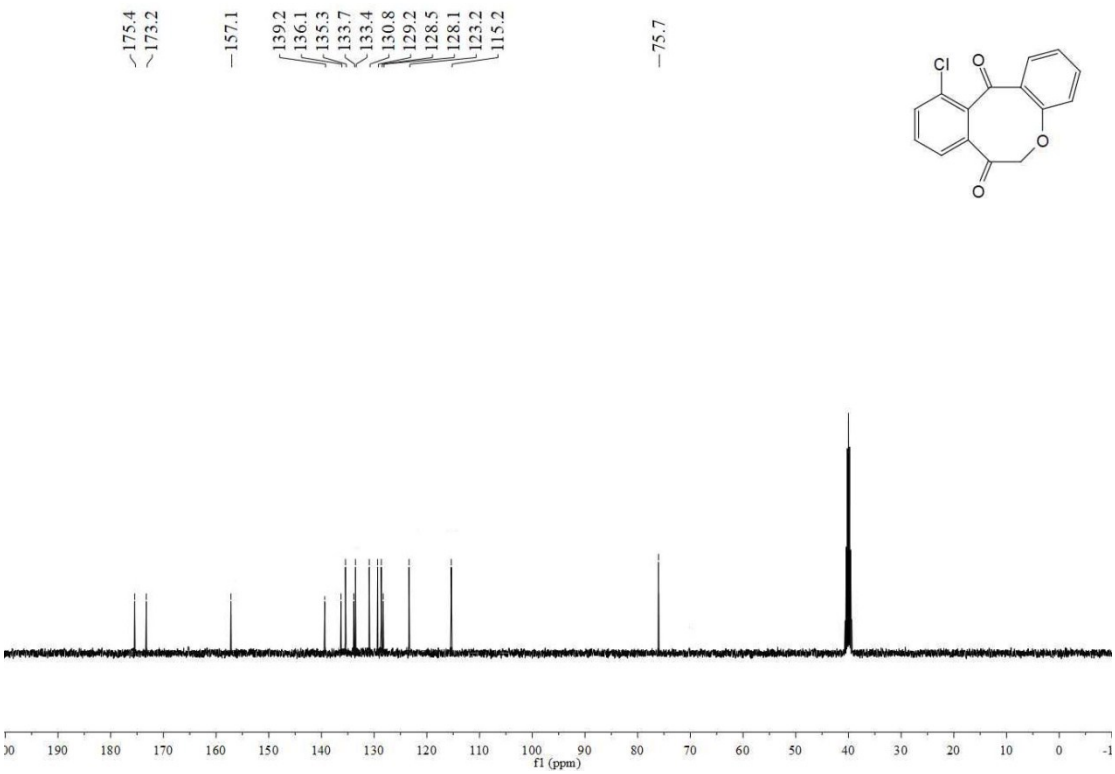


Figure S99. ^{13}C NMR of 11-chloro-6H-dibenzo[b,e]oxocine-7,12-dione **(2u).**

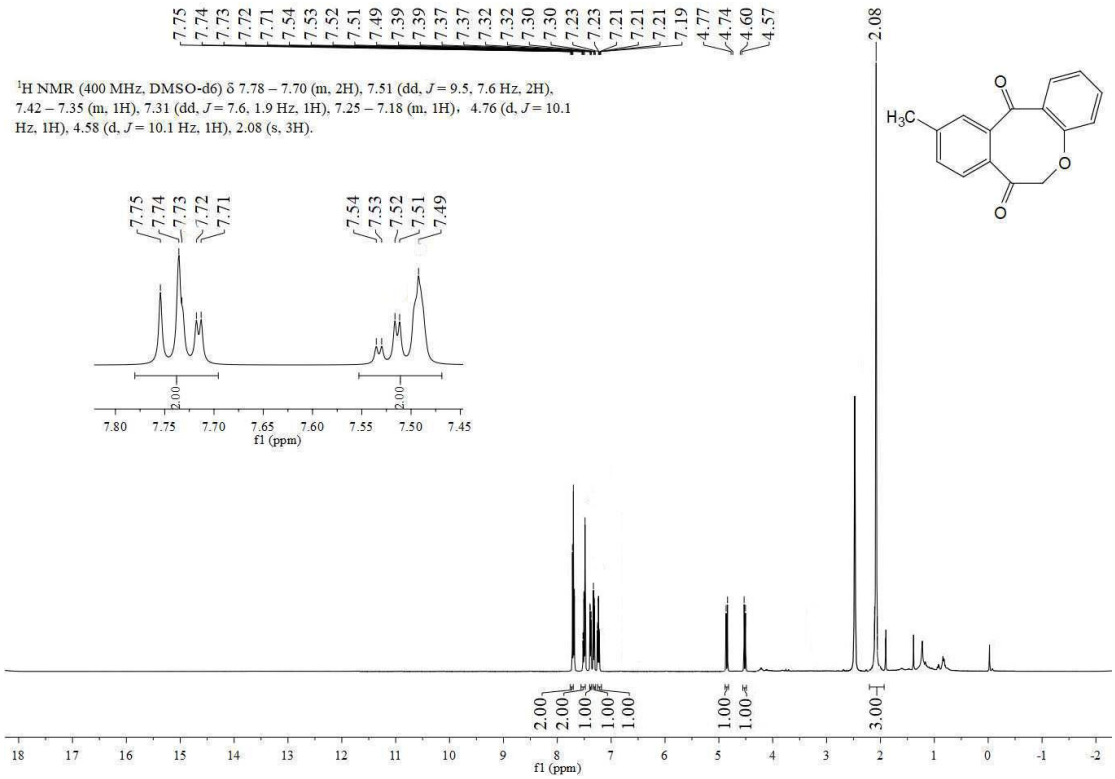


Figure S100. ^{1}H NMR of 10-methyl-6H-dibenzo[b,e]oxocine-7,12-dione **(2v).**

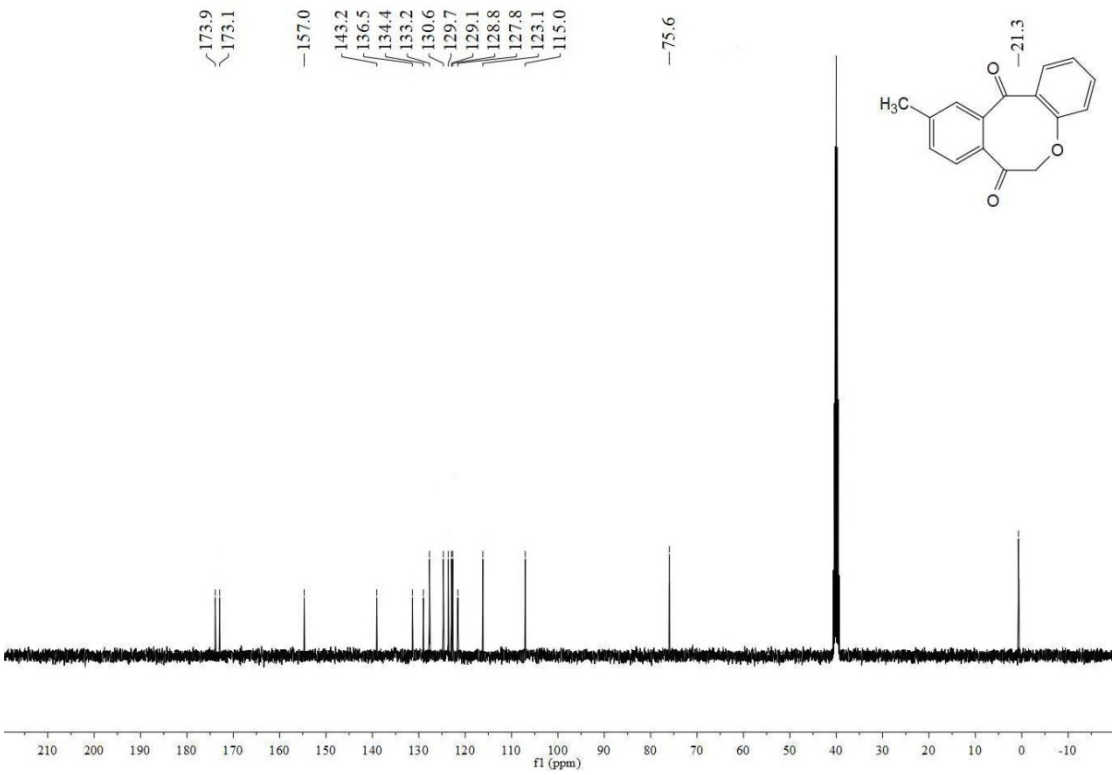


Figure S101. ^{13}C NMR of 10-methyl-6H-dibenzo[b,e]oxocine-7,12-dione **(2v).**

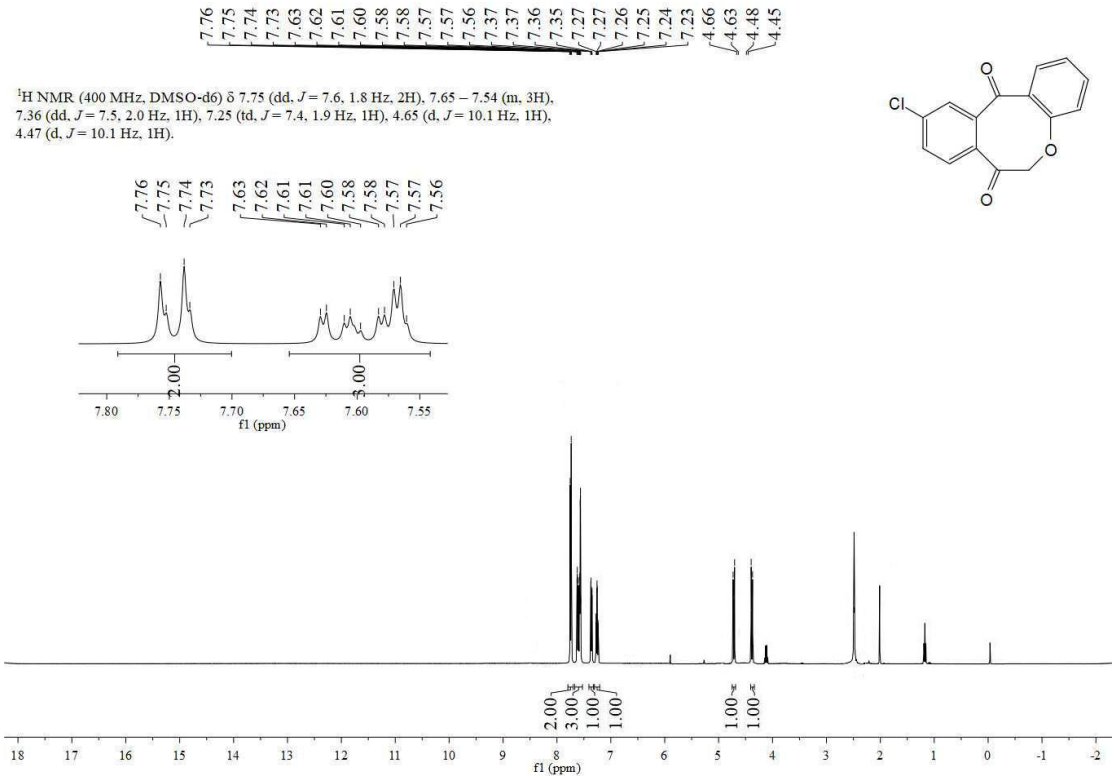


Figure 102. ^{1}H NMR of 10-chloro-6H-dibenzo[b,e]oxocine-7,12-dione **(2w).**

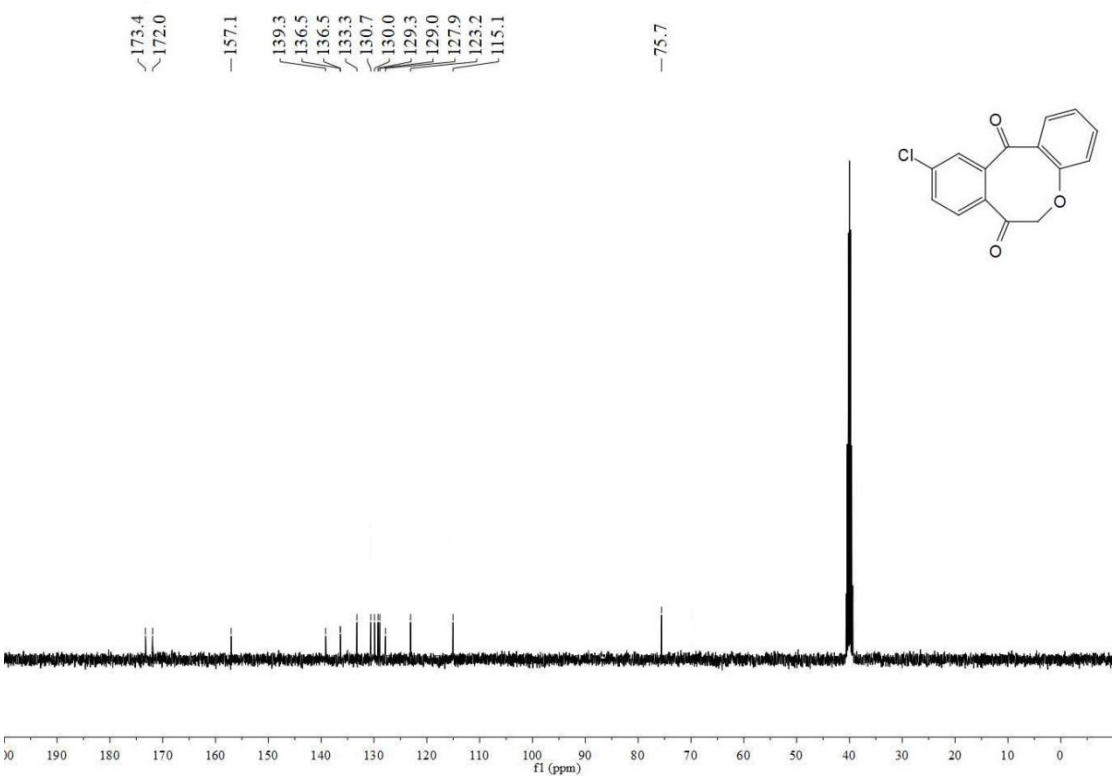


Figure S103. ^{13}C NMR of 10-chloro-6H-dibenzo[b,e]oxocine-7,12-dione **(2w).**

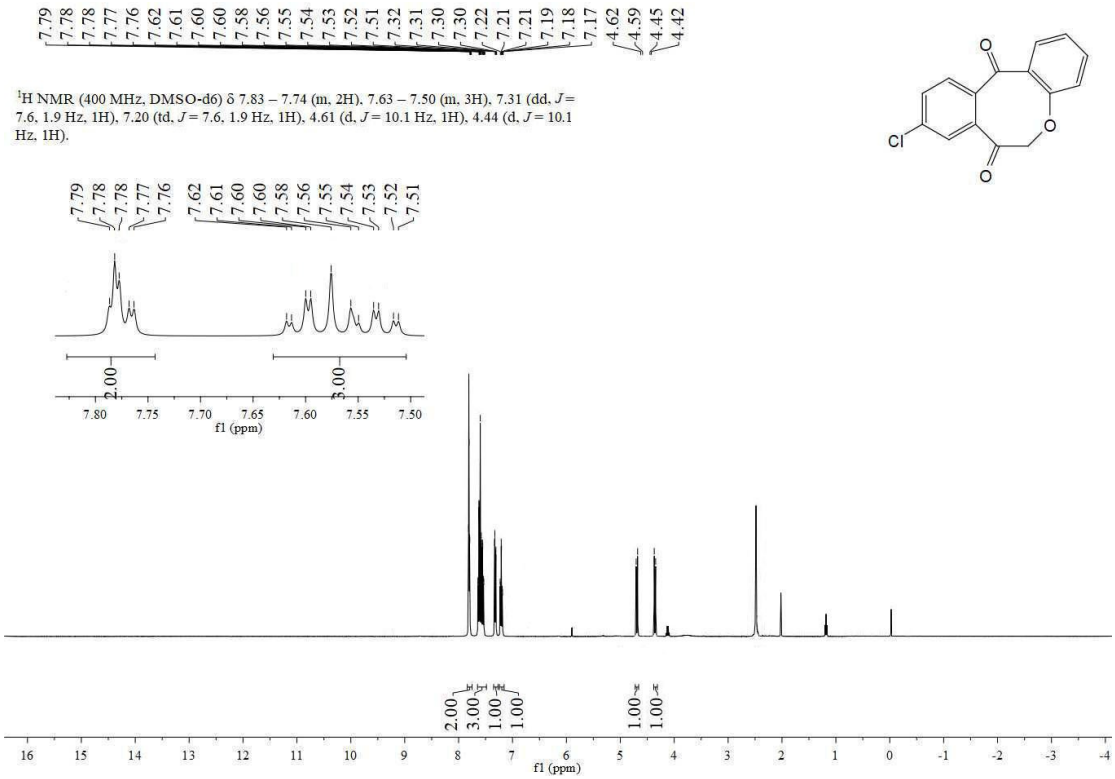


Figure S104. ^{1}H NMR of 9-chloro-6H-dibenzo[b,e]oxocine-7,12-dione **(2x).**

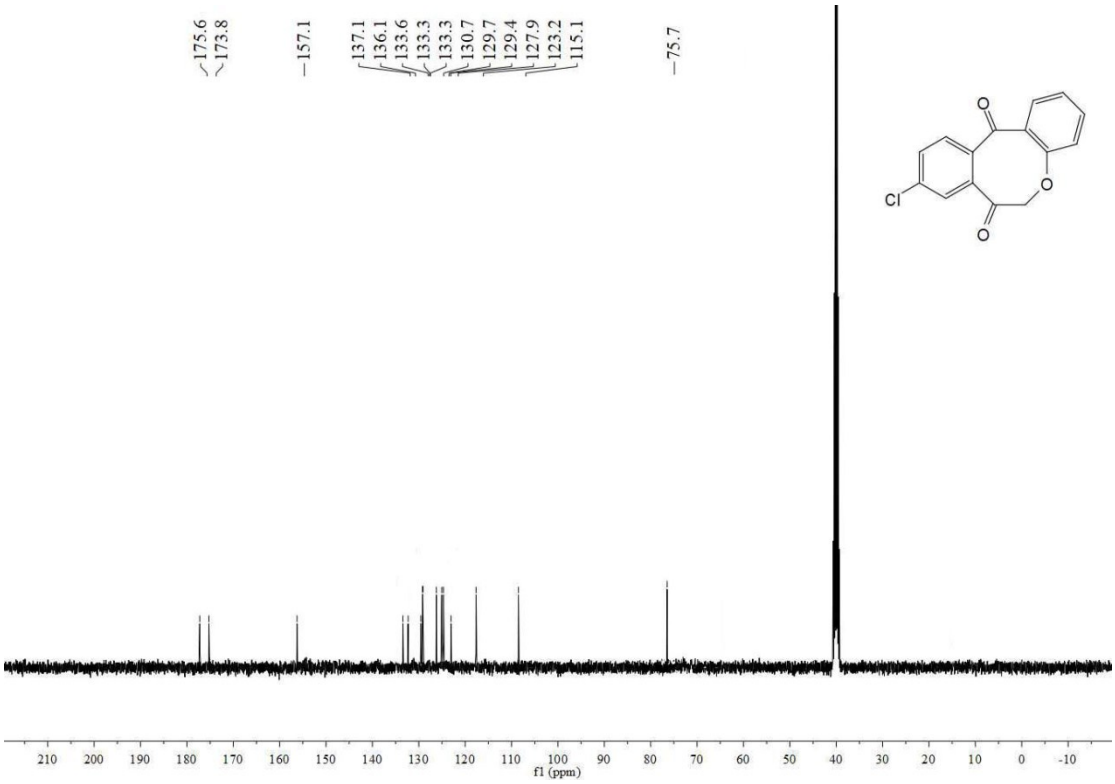


Figure S105. ^{13}C NMR of 9-chloro-6H-dibenzo[b,e]oxocine-7,12-dione **(2x).**

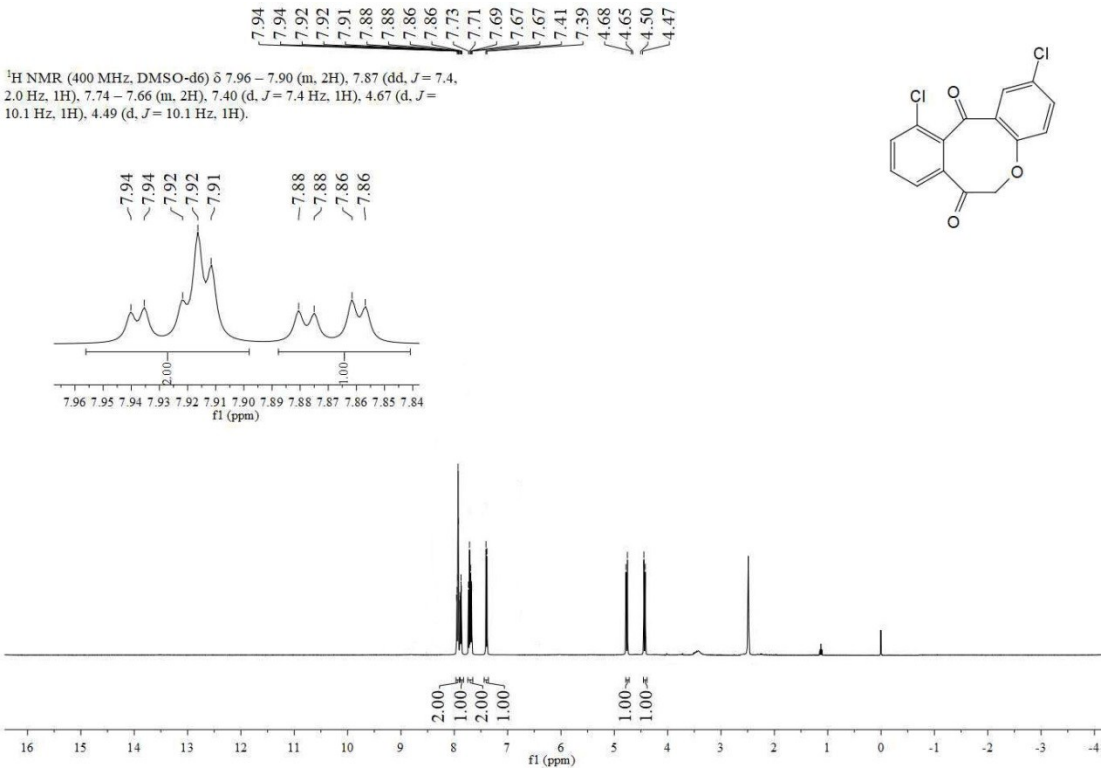


Figure S106. ^{1}H NMR of 2,11-dichloro-6H-dibenzo[b,e]oxocine-7,12-dione **(2y).**

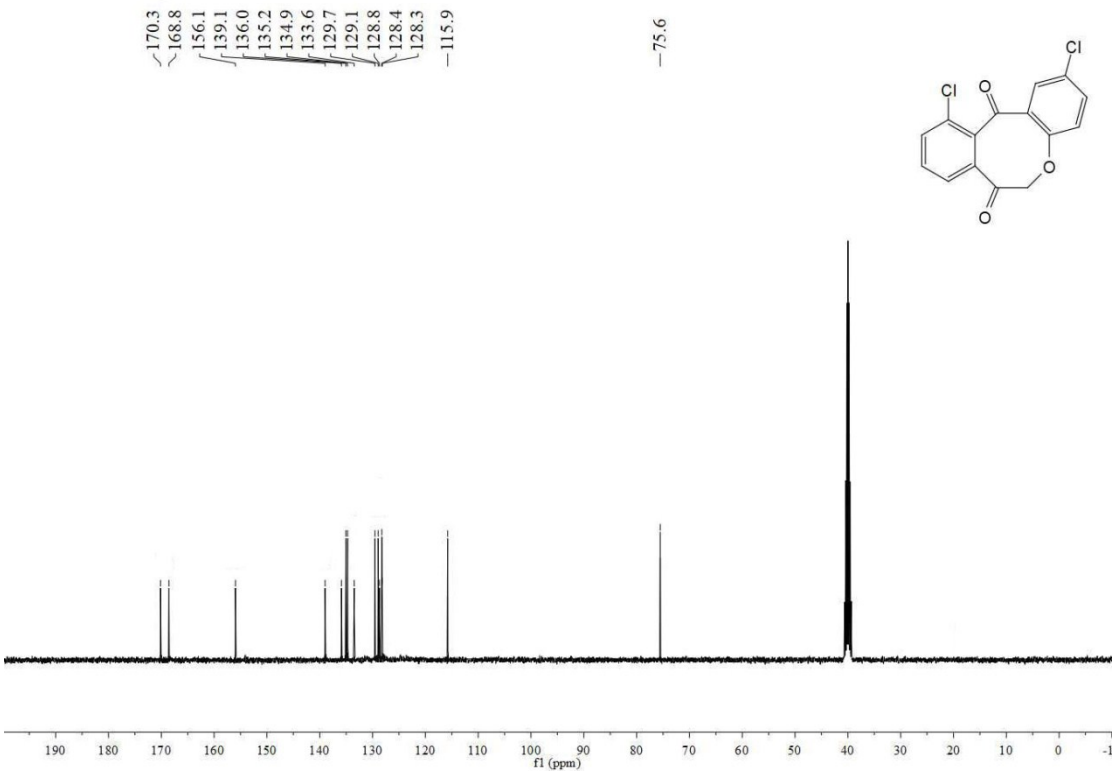


Figure S107. ^{13}C NMR of 2,11-dichloro-6H-dibenzo[b,e]oxocine-7,12-dione **(2y).**

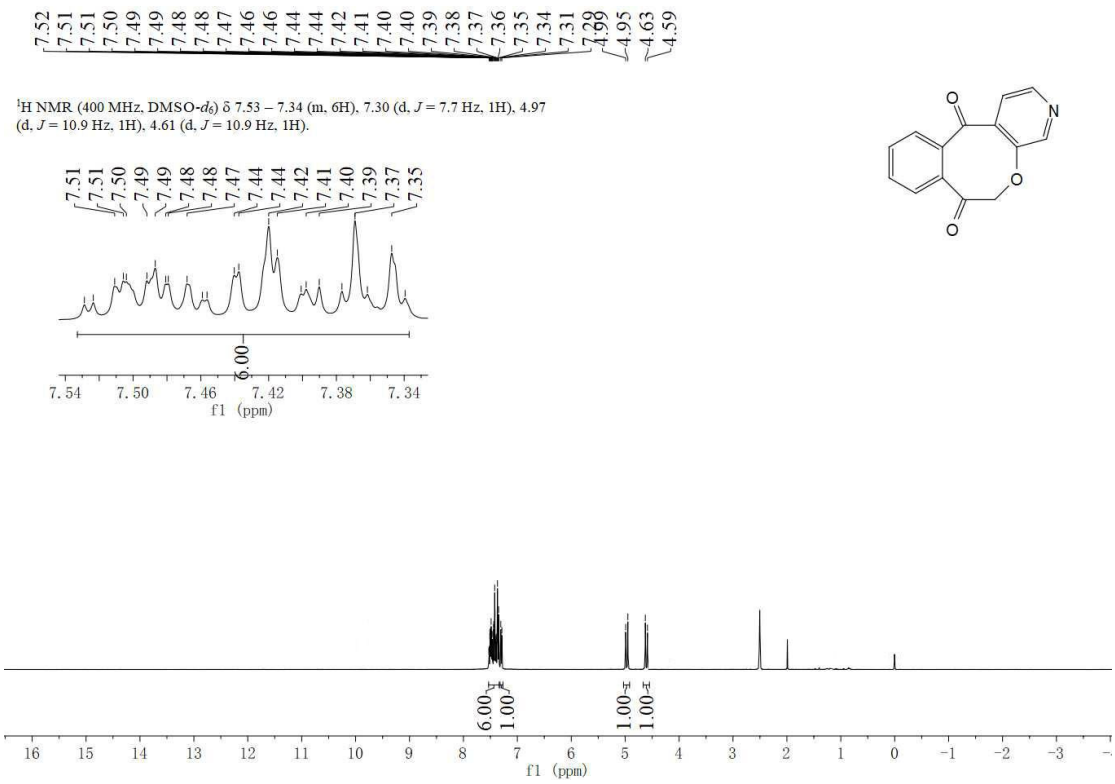


Figure S108. ^{1}H NMR of 6H-benzo[5,6]oxocino[2,3-c]pyridine-7,12-dione **(2z).**

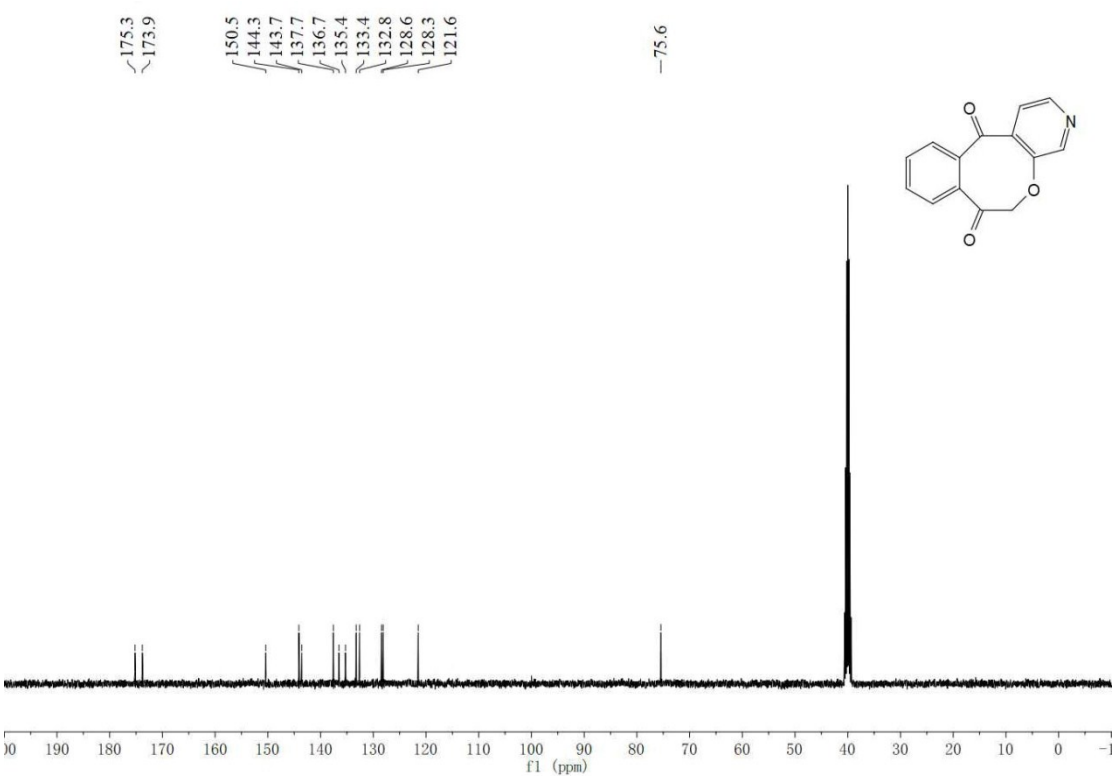
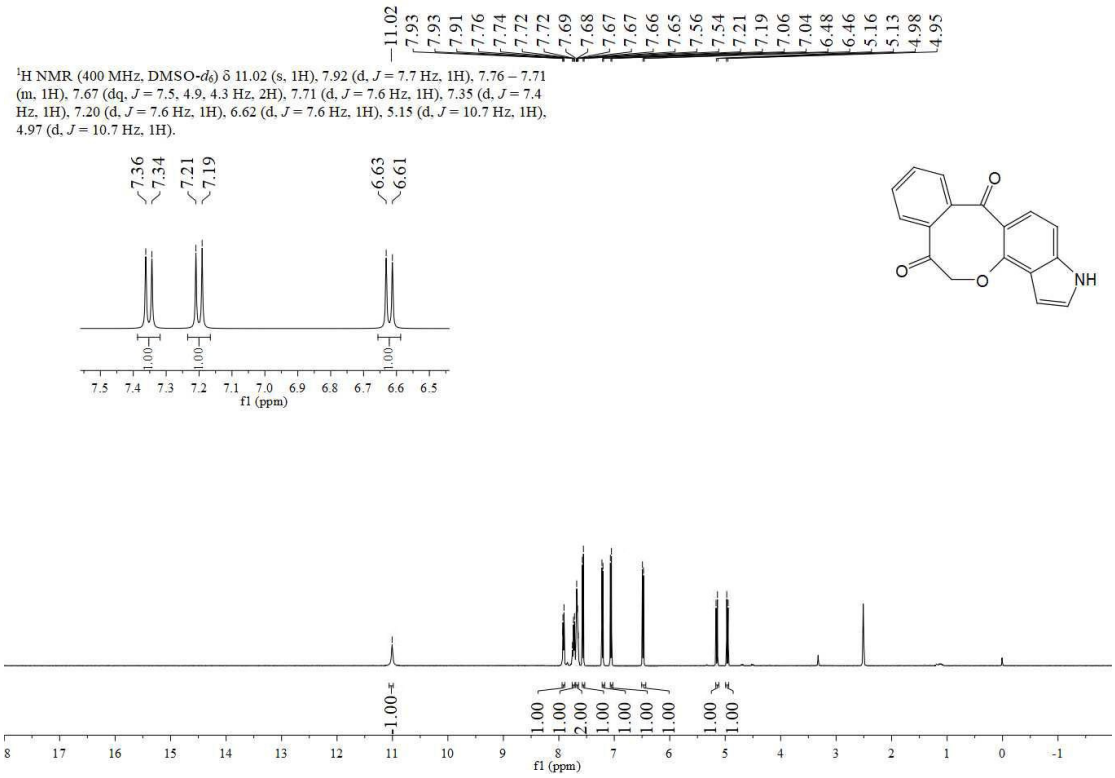


Figure S109. ^{13}C NMR of 6H-benzo[5,6]oxocino[2,3-c]pyridine-7,12-dione **(2z).**



^{1}H NMR (400 MHz, DMSO-d_6) δ 11.02 (s, 1H), 7.92 (d, J = 7.7 Hz, 1H), 7.76 – 7.71 (m, 1H), 7.67 (dq, J = 7.5, 4.9, 4.3 Hz, 2H), 7.71 (d, J = 7.6 Hz, 1H), 7.35 (d, J = 7.4 Hz, 1H), 7.20 (d, J = 7.6 Hz, 1H), 6.62 (d, J = 7.6 Hz, 1H), 5.15 (d, J = 10.7 Hz, 1H), 4.97 (d, J = 10.7 Hz, 1H).

Figure S110. ^{1}H NMR of benzo[5,6]oxocino[2,3-e]indole-8,13(3H,7H)-dione **(2aa).**

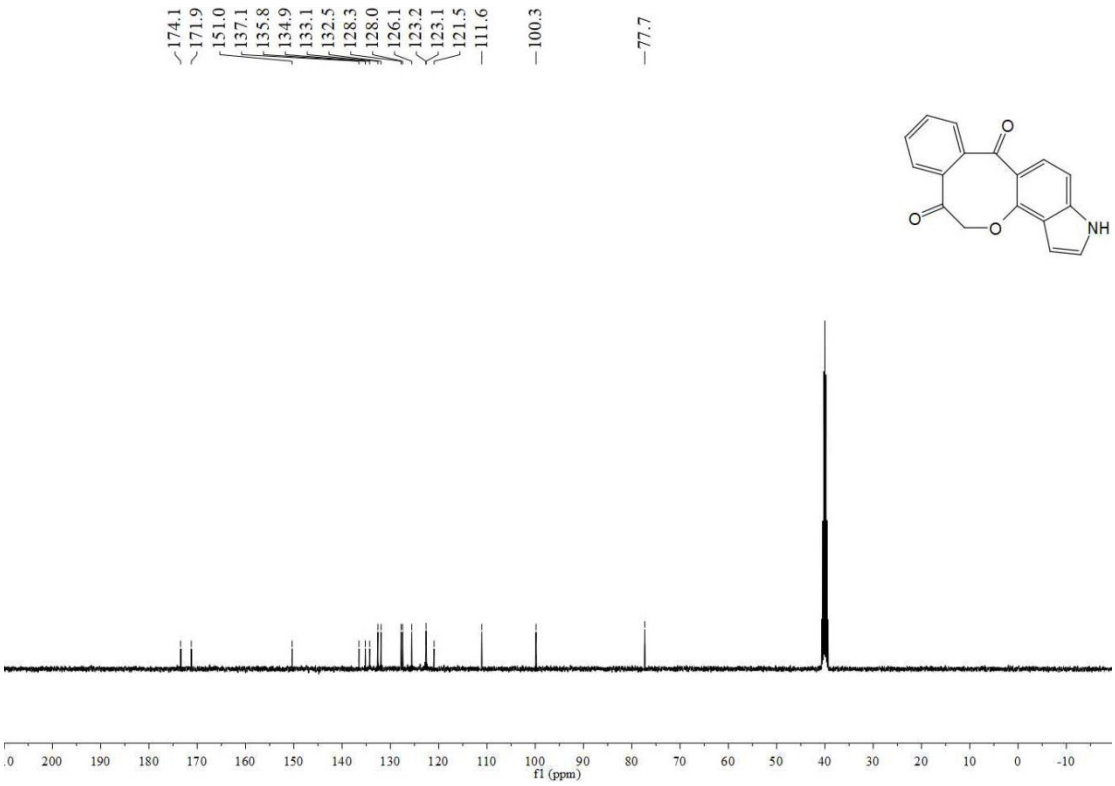
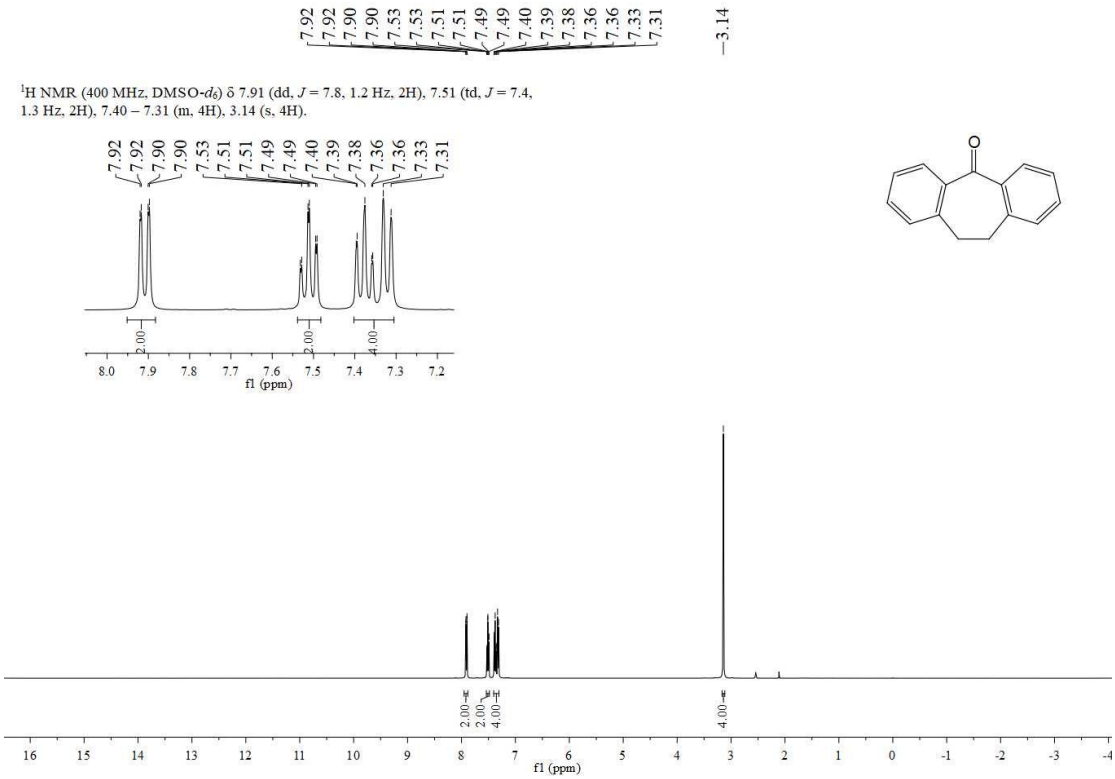


Figure S111. ^{13}C NMR of benzo[5,6]oxocino[2,3-e]indole-8,13(3H,7H)-dione **(2aa).**



^1H NMR (400 MHz, DMSO-d_6) δ 7.91 (dd, J = 7.8, 1.2 Hz, 2H), 7.51 (td, J = 7.4, 1.3 Hz, 2H), 7.40 – 7.31 (m, 4H), 3.14 (s, 4H).

Figure S112. ^1H NMR of 10,11-dihydro-5H-dibenzo[a,d][7]annulen-5-one **(2ab).**

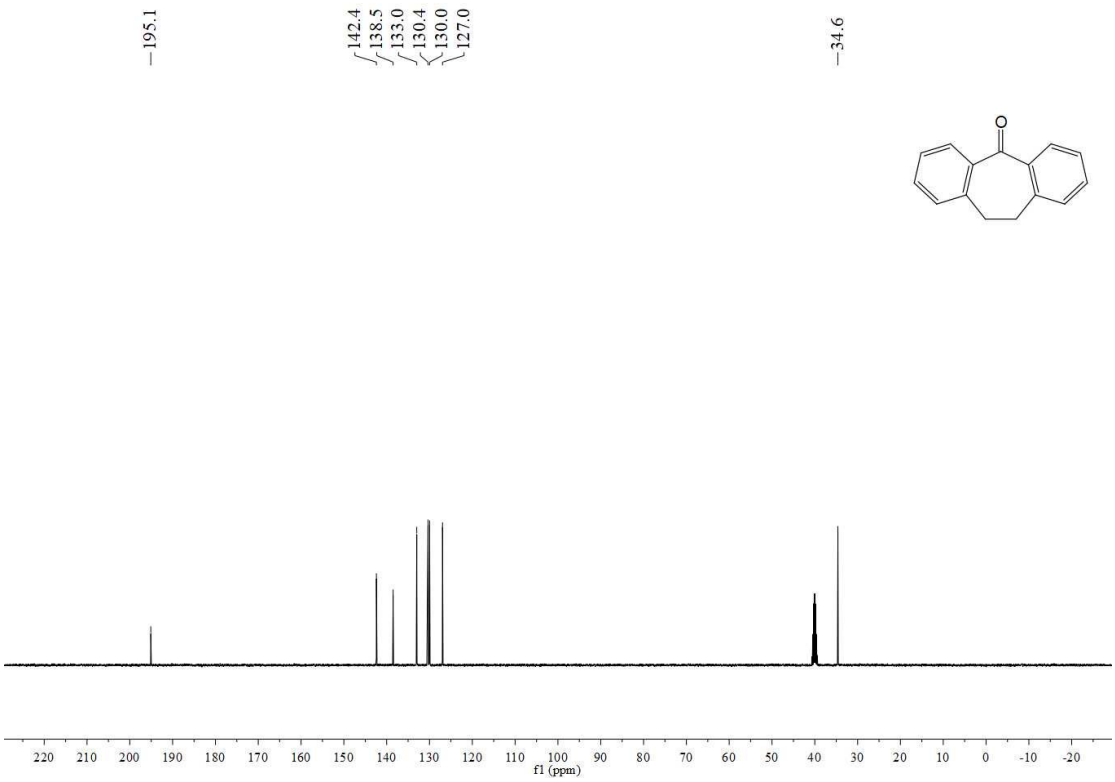


Figure S113. ^{13}C NMR of 10,11-dihydro-5H-dibenzo[a,d][7]annulen-5-one **(2ab).**

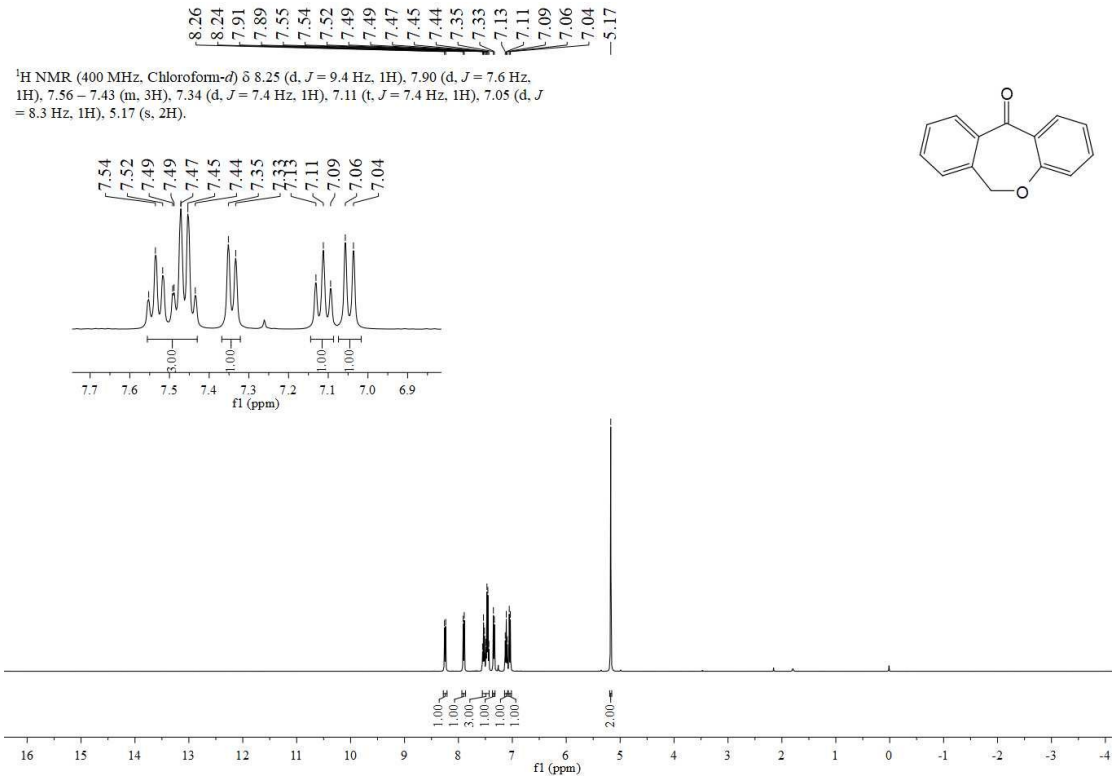


Figure S114. ^{1}H NMR of dibenzo[b,e]oxepin-11(6H)-one **(2ac).**

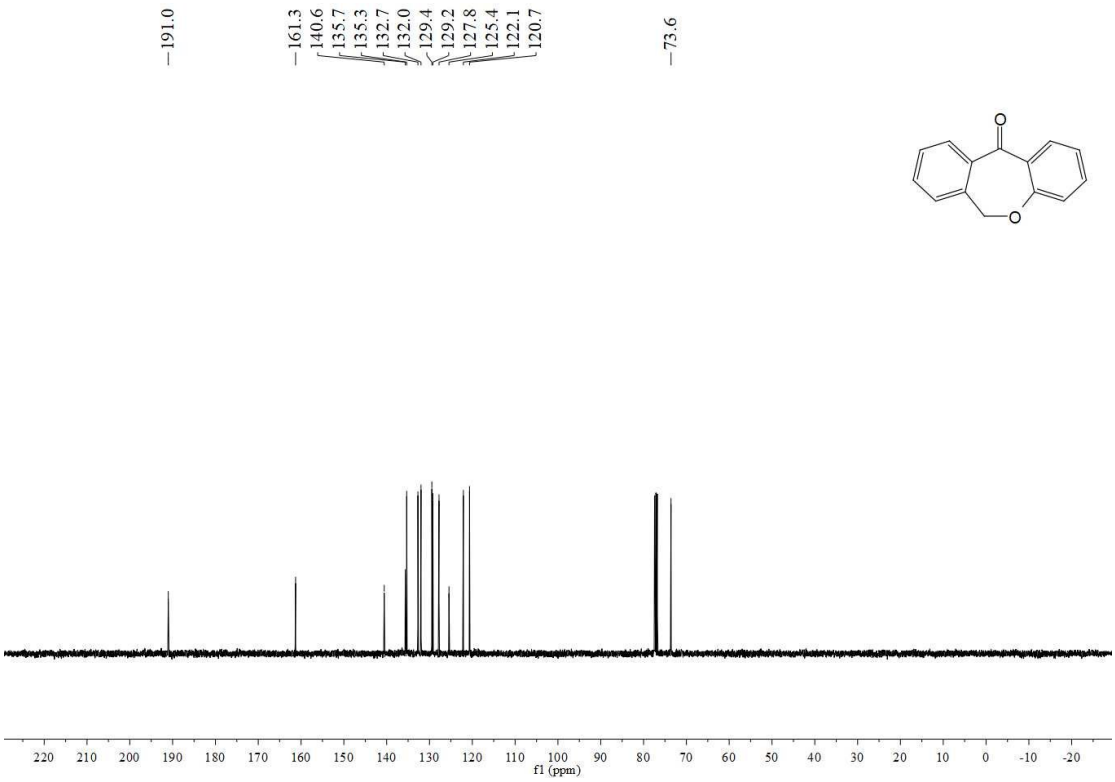


Figure S115. ^{13}C NMR of dibenzo[b,e]oxepin-11(6H)-one **(2ac).**

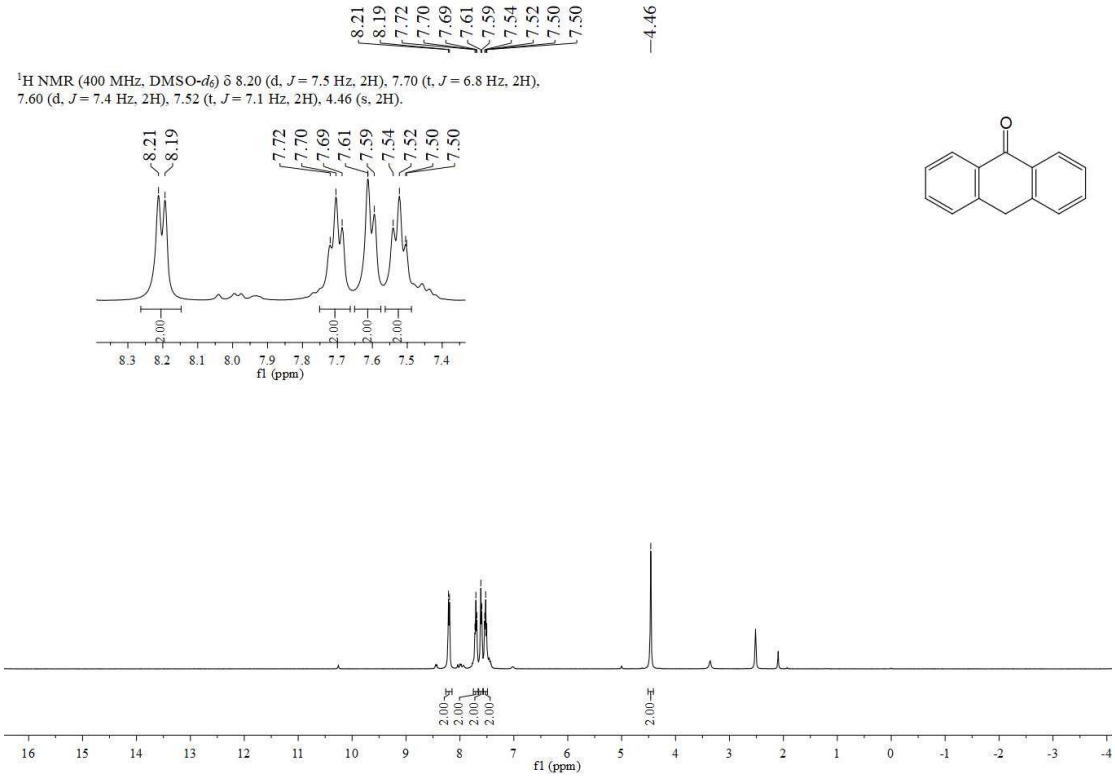


Figure S116. ^1H NMR of anthracen-9(10H)-one **(2ad).**

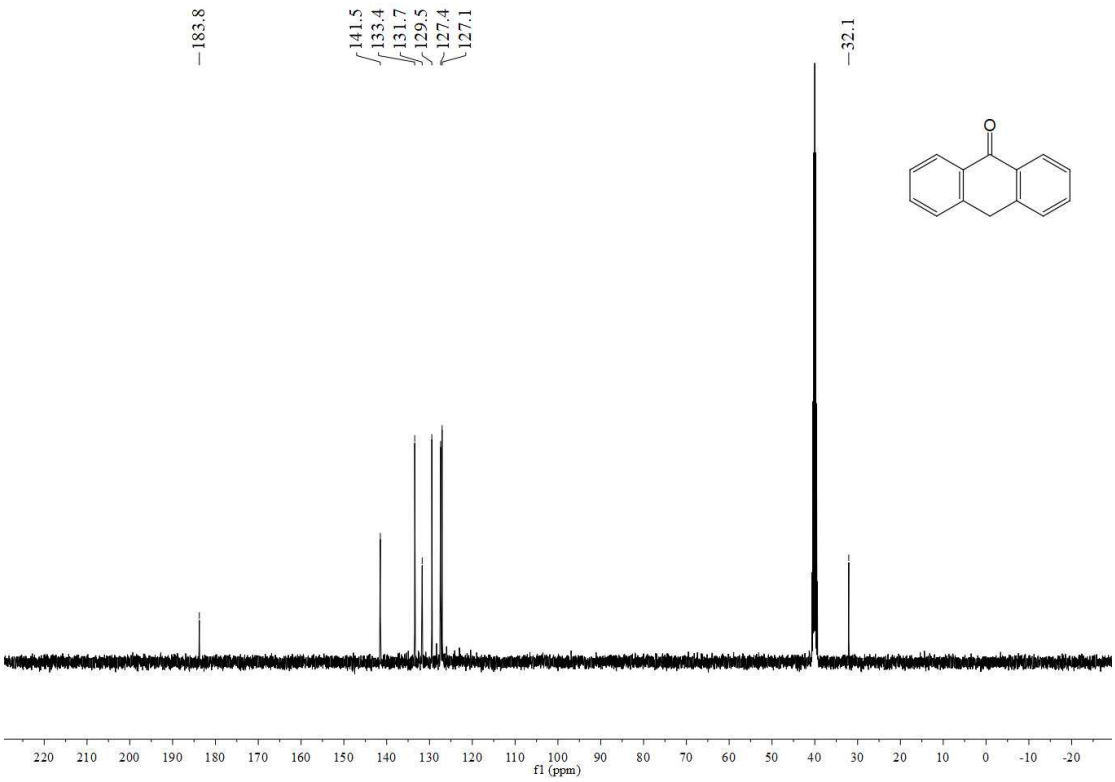


Figure S117. ^{13}C NMR of anthracen-9(10H)-one **(2ad).**

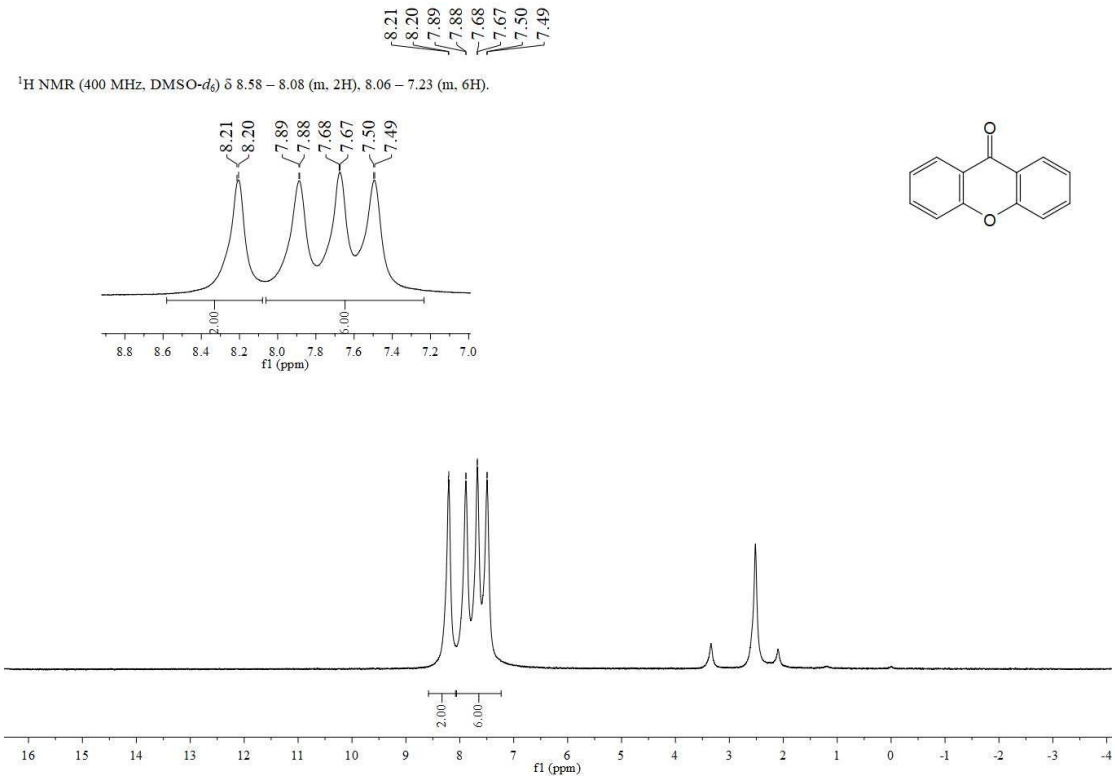


Figure S118. ^1H NMR of 9H-xanthen-9-one **(2ae).**

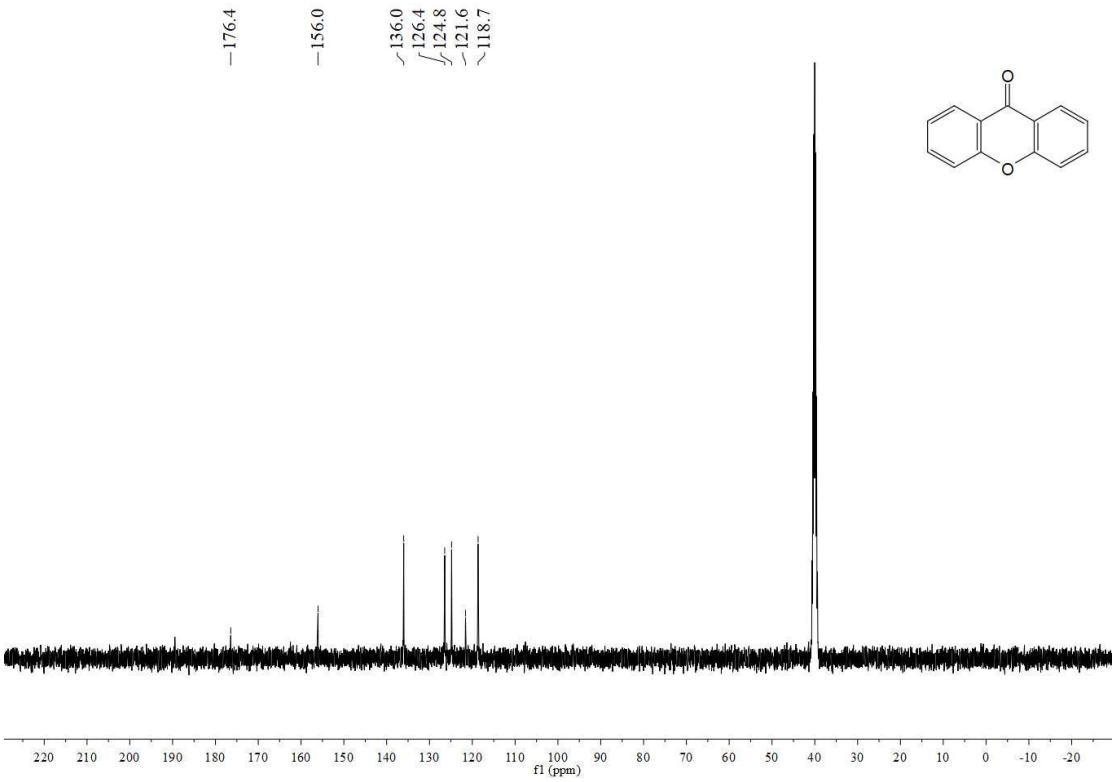


Figure S119. ^{13}C NMR of 9H-xanthen-9-one **(2ae).**

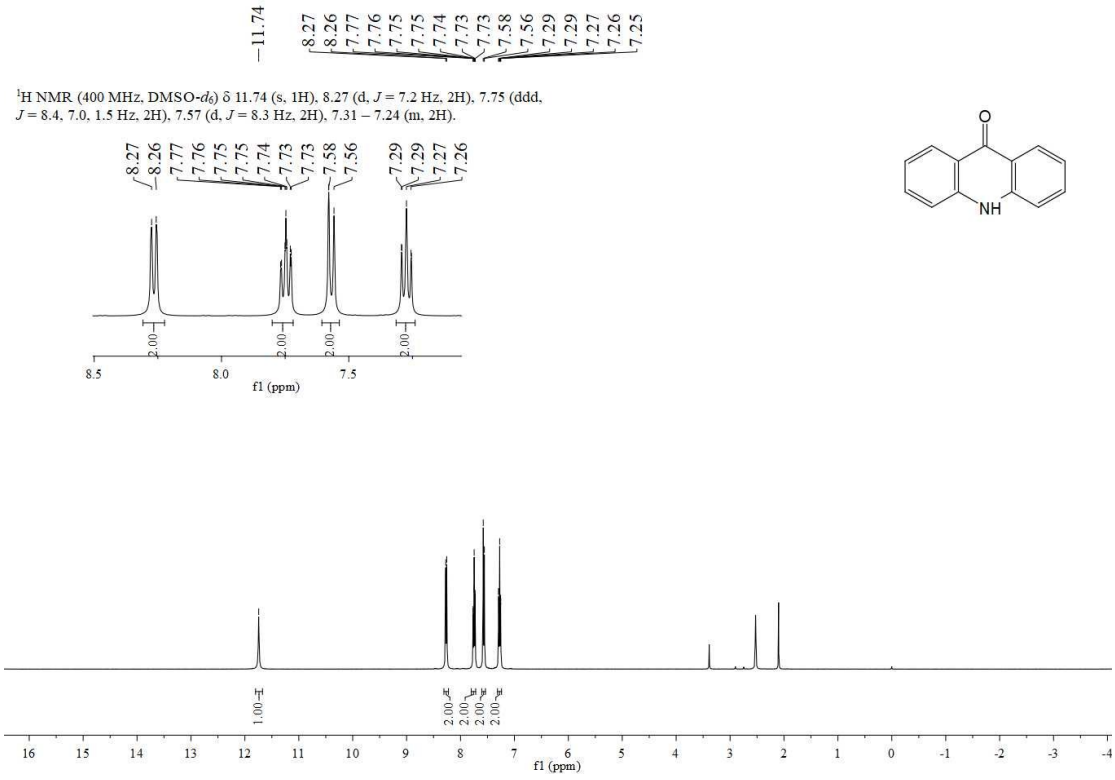


Figure S120. ^1H NMR of acridin-9(10H)-one **(2af).**

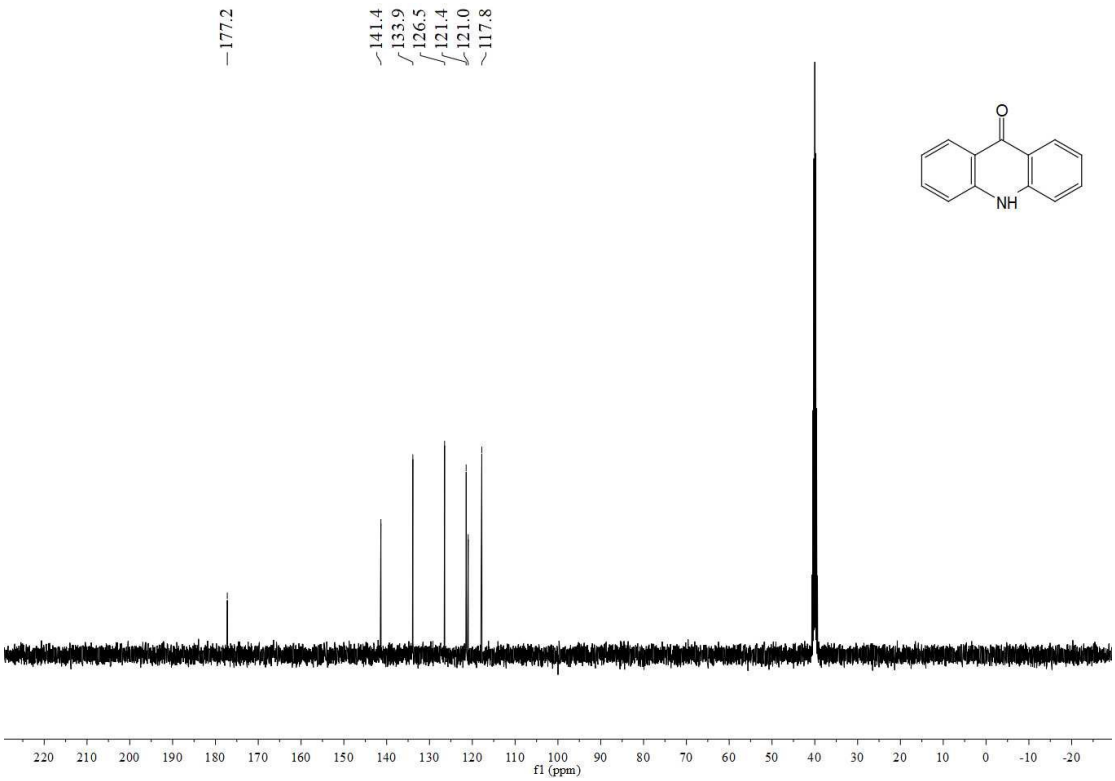
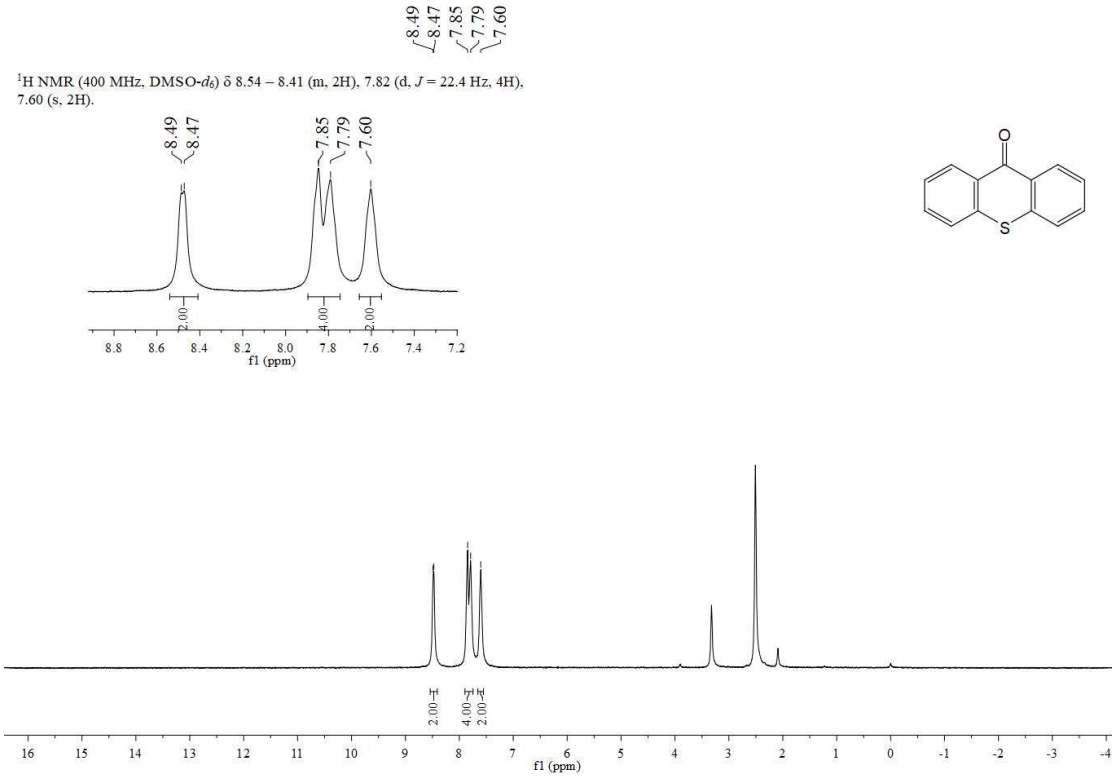


Figure S121. ^{13}C NMR of acridin-9(10H)-one **(2af).**



^1H NMR (400 MHz, DMSO-d_6) δ 8.54 – 8.41 (m, 2H), 7.82 (d, J = 22.4 Hz, 4H), 7.60 (s, 2H).

Figure S122. ^1H NMR of 9H-thioxanthen-9-one **(2ag).**

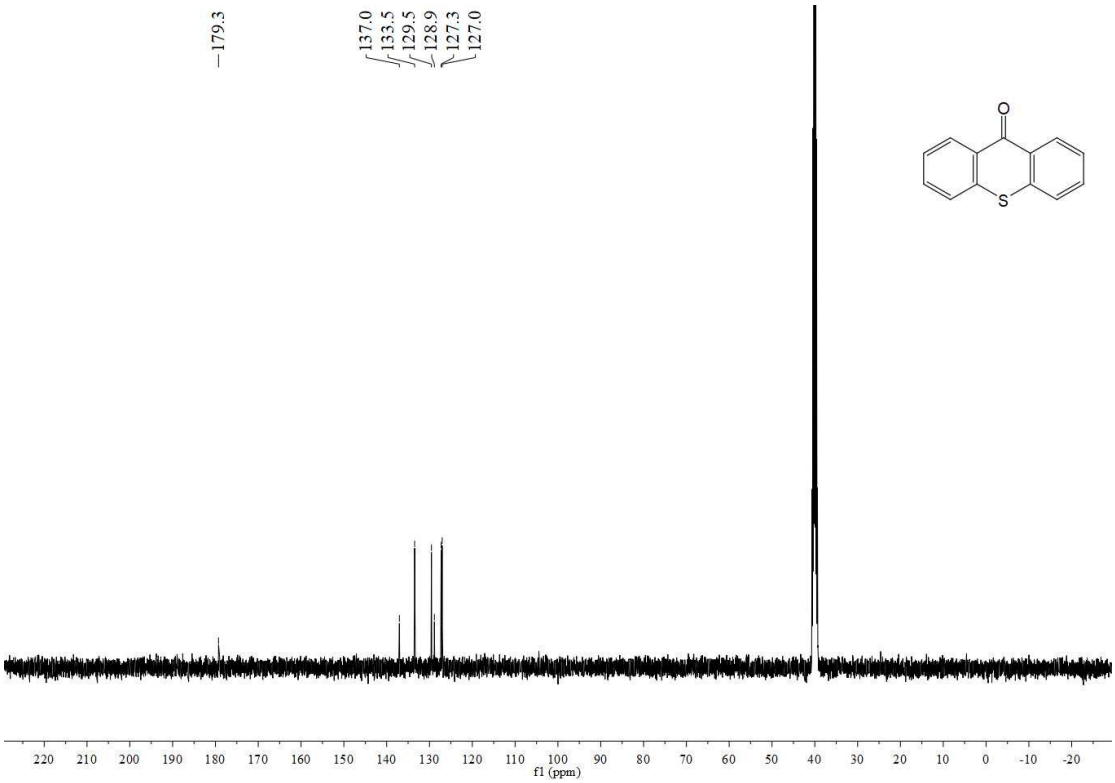


Figure S123. ^{13}C NMR of 9H-thioxanthen-9-one **(2ag).**

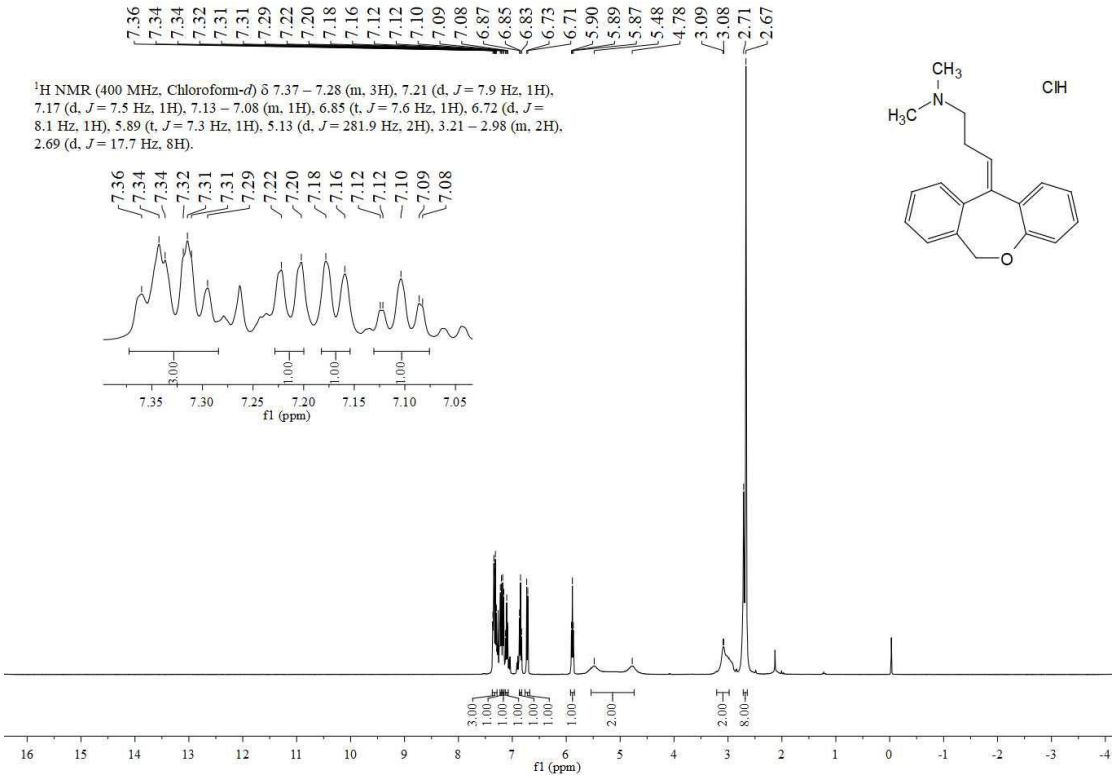


Figure S124. ^{1}H NMR of Doxepin Hydrochloride**.**

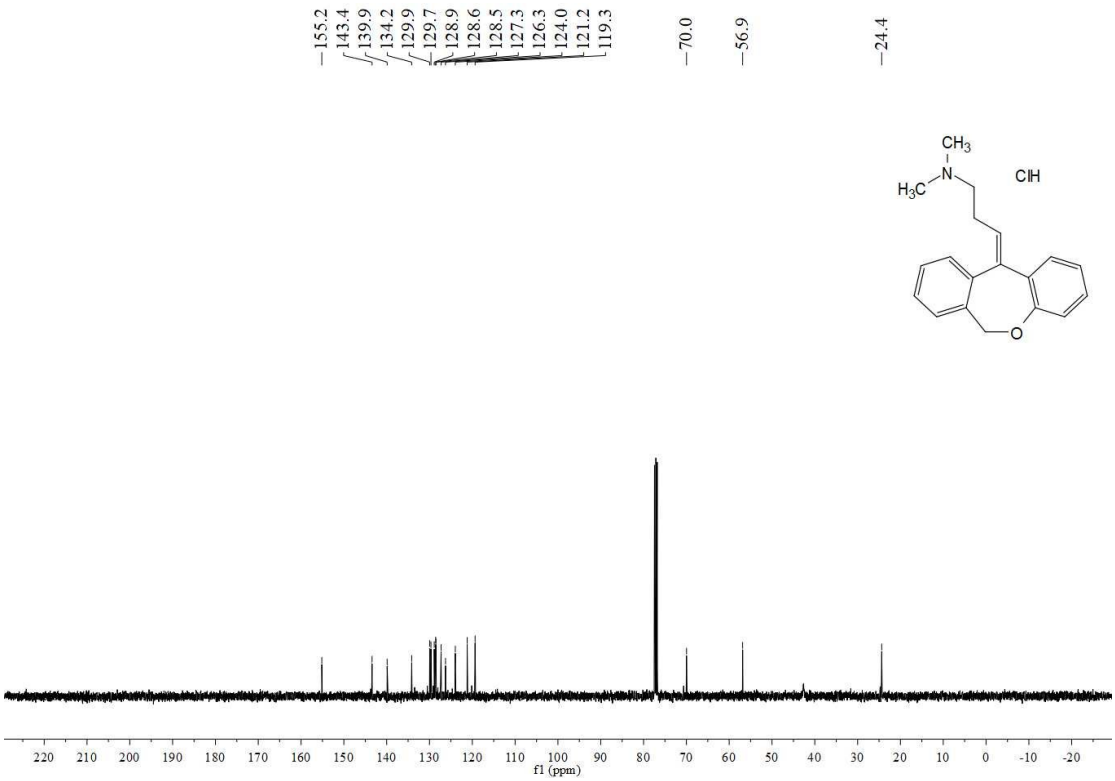


Figure S125. ^{13}C NMR of Doxepin Hydrochloride**.**

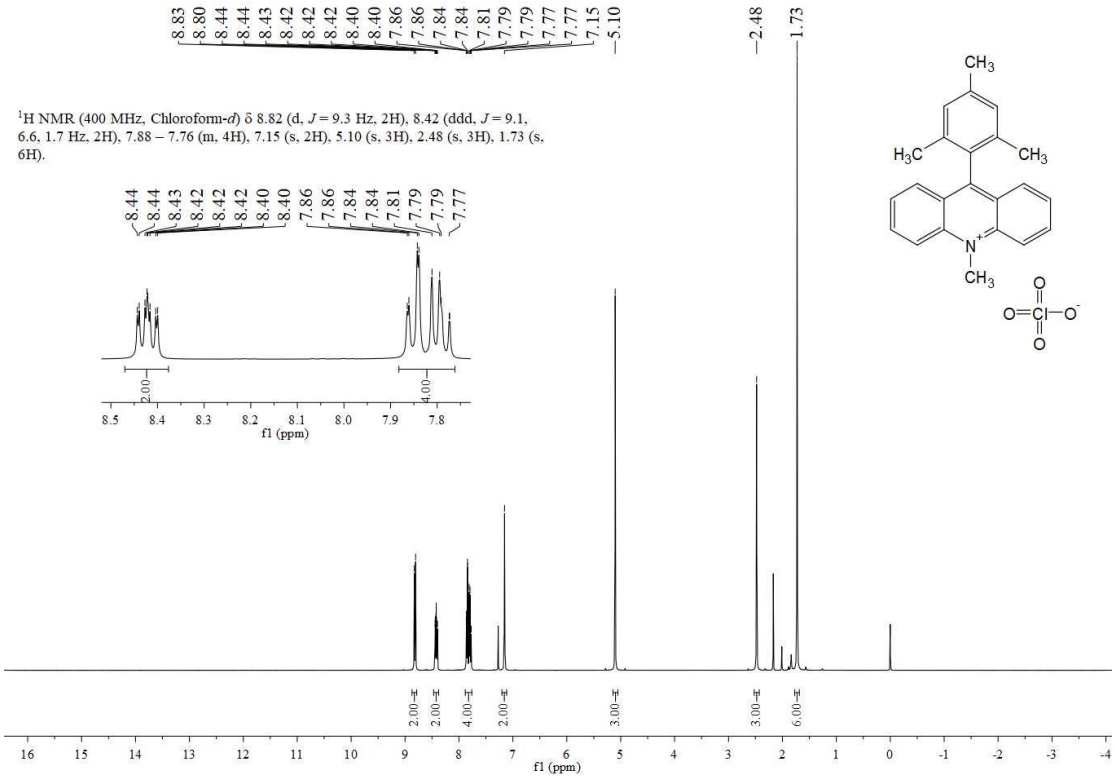


Figure S126. ^{1}H NMR of 9-Mesityl-10-methylacridinium Perchlorate**.**

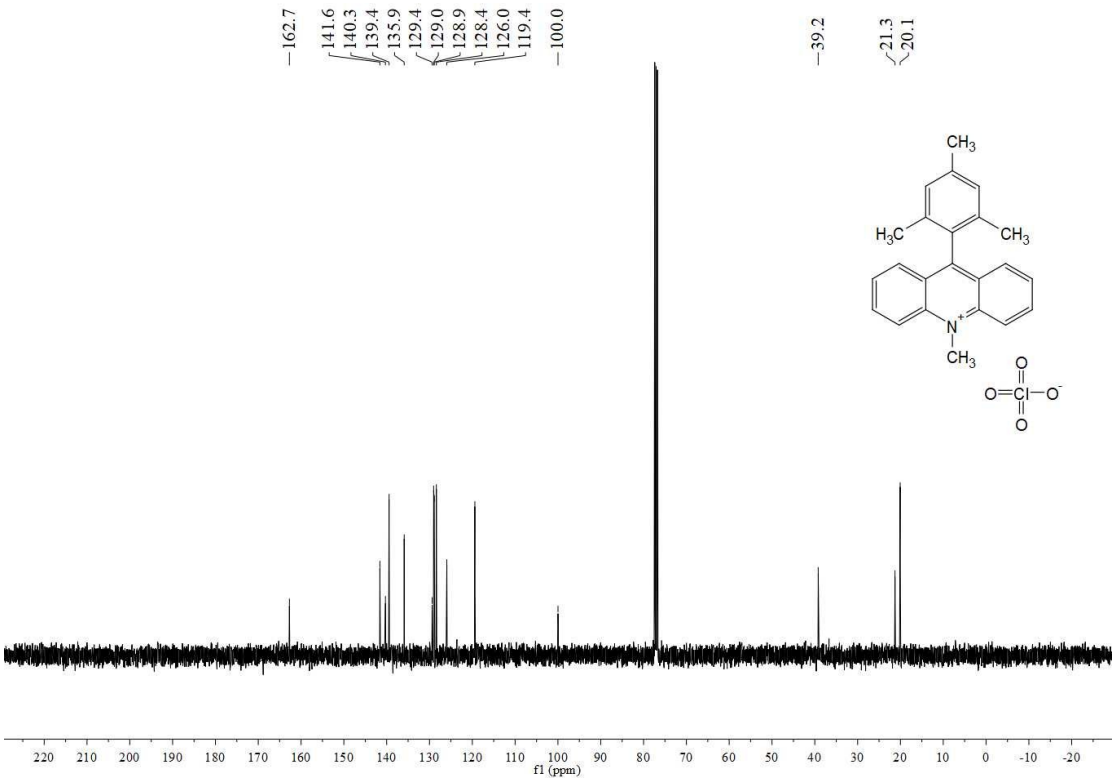


Figure S127. ^{13}C NMR of 9-Mesityl-10-methylacridinium Perchlorate**.**

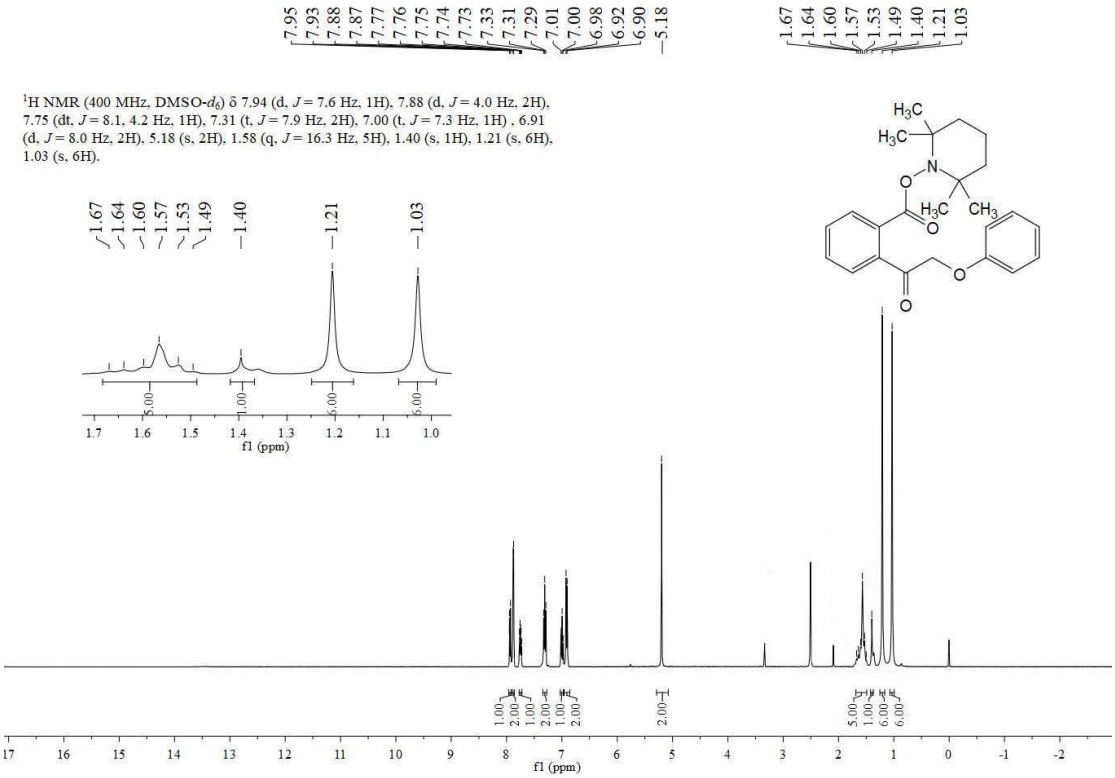


Figure S128. ^{1}H NMR of 2,2,6,6-tetramethylpiperidin-1-yl 2-(2-phenoxyacetyl)benzoate **(v).**

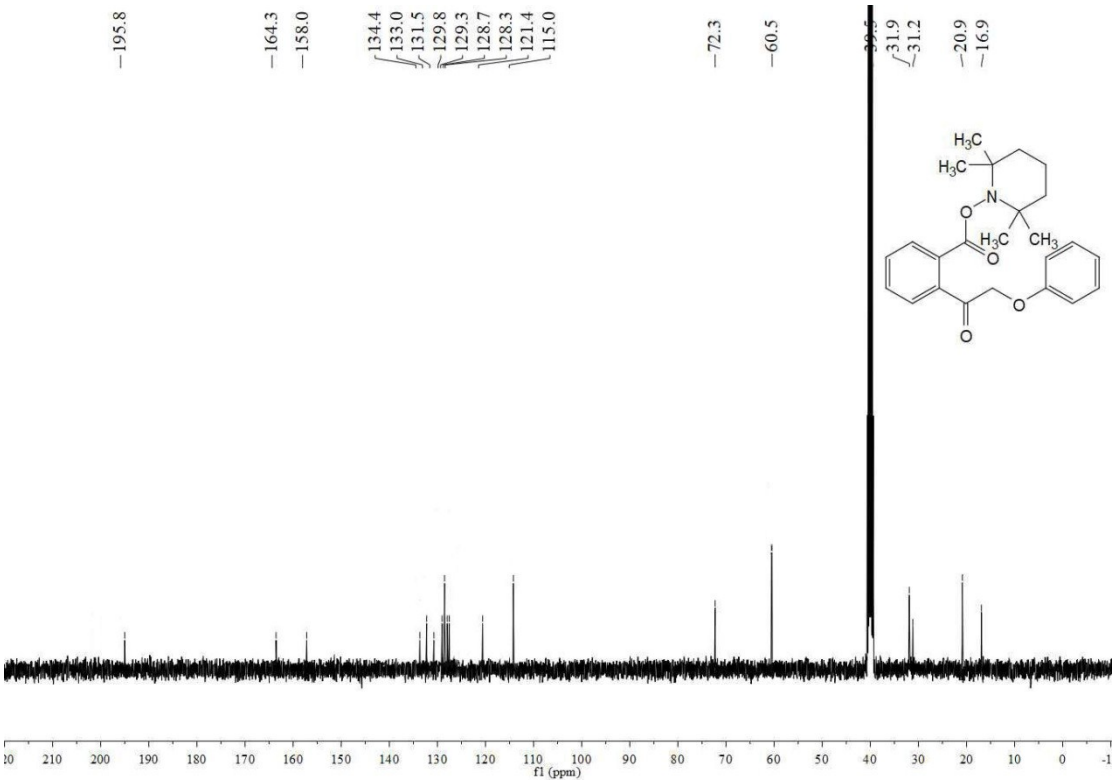


Figure S129. ^{13}C NMR of 2,2,6,6-tetramethylpiperidin-1-yl 2-(2-phenoxyacetyl)benzoate **(v).**